NOLOGY DEPT.

Gas Journal

Vol. 267. 103rd Year. LONDON, AUGUST 29, 1951. No. 4604. Price 1/-
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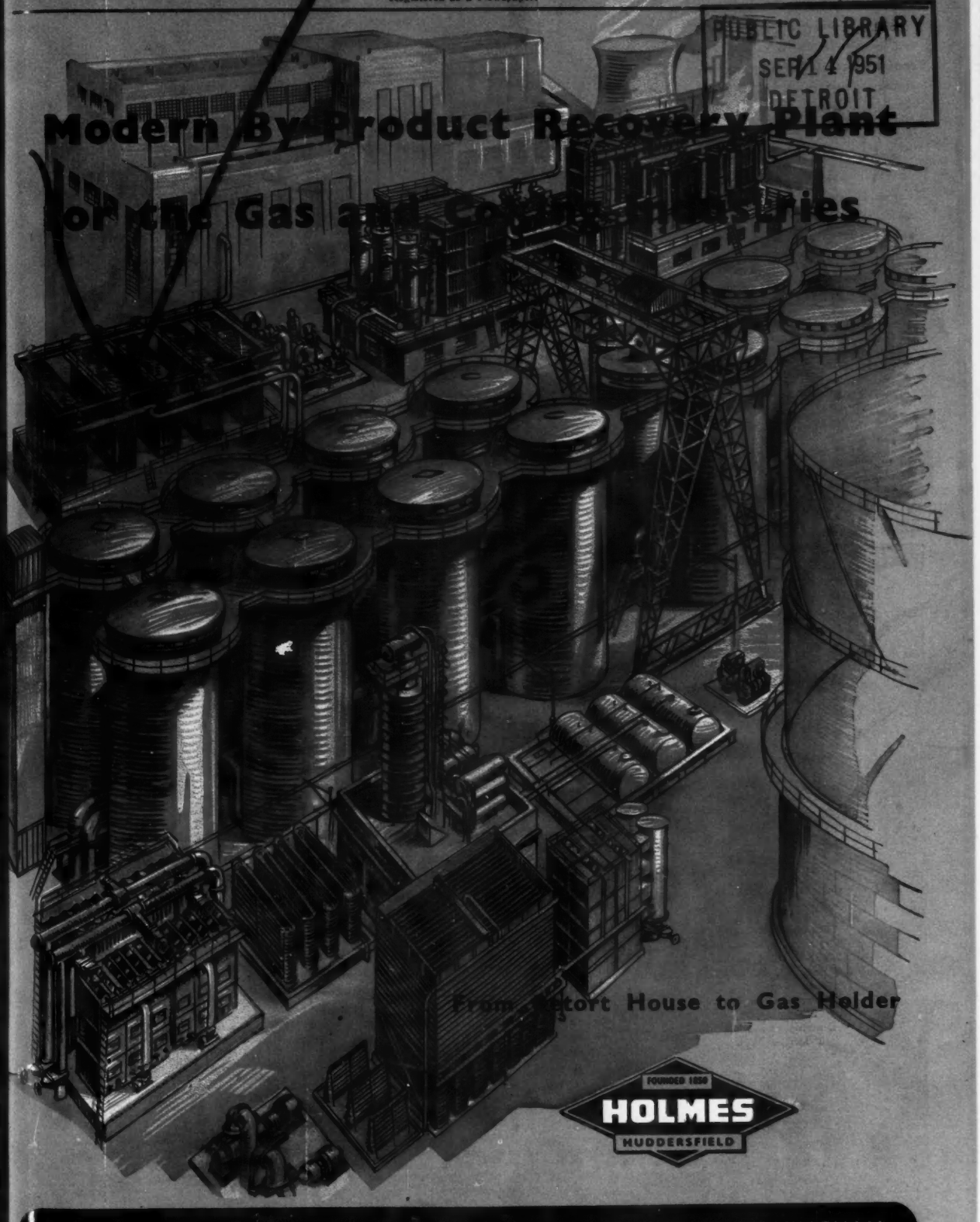

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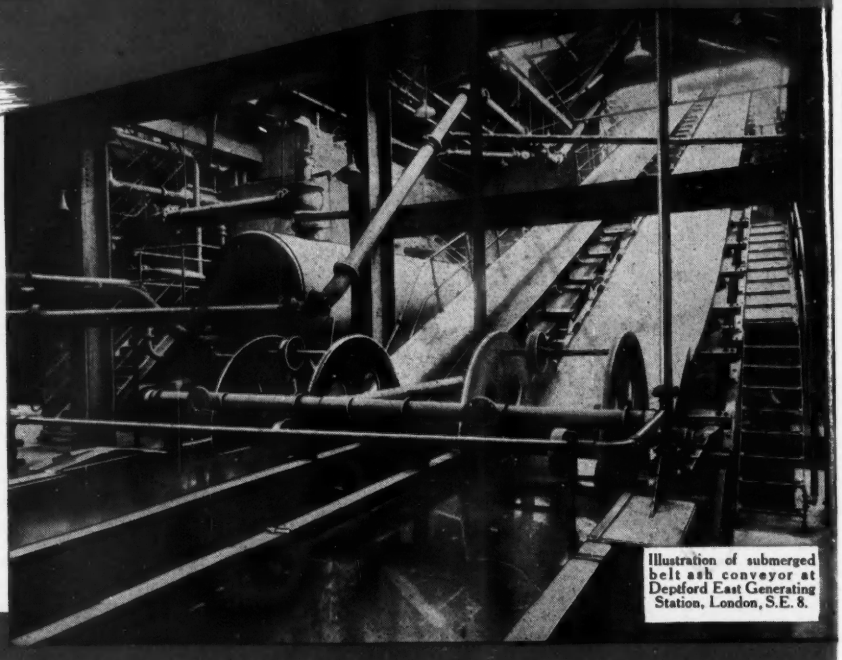

Illustration of submerged belt ash conveyor at Deptford East Generating Station, London, S.E. 8.

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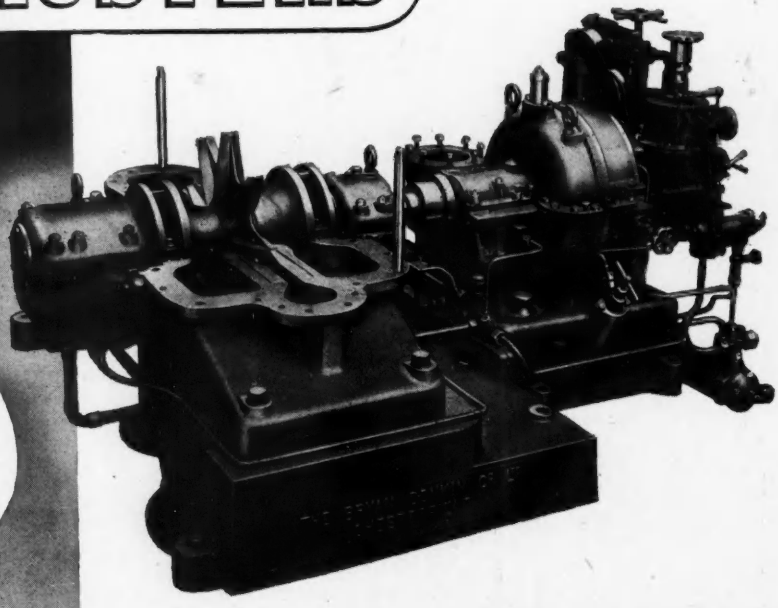

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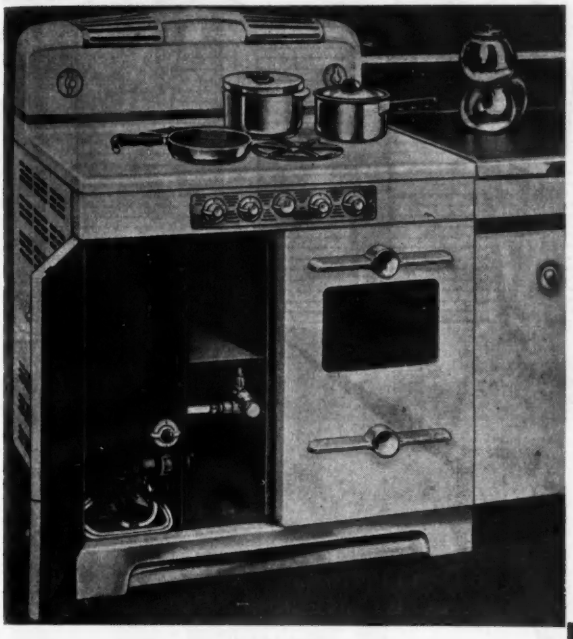

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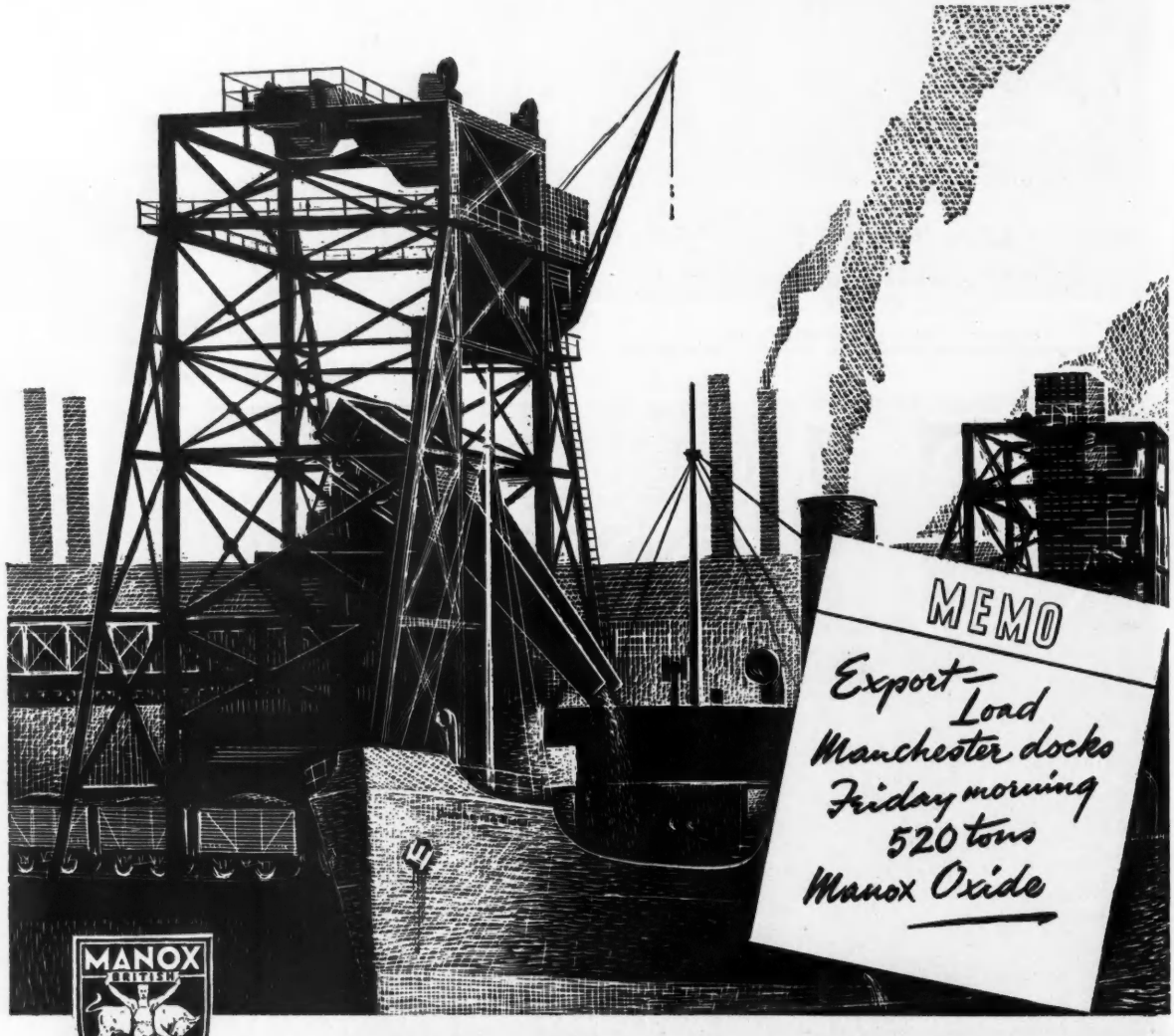

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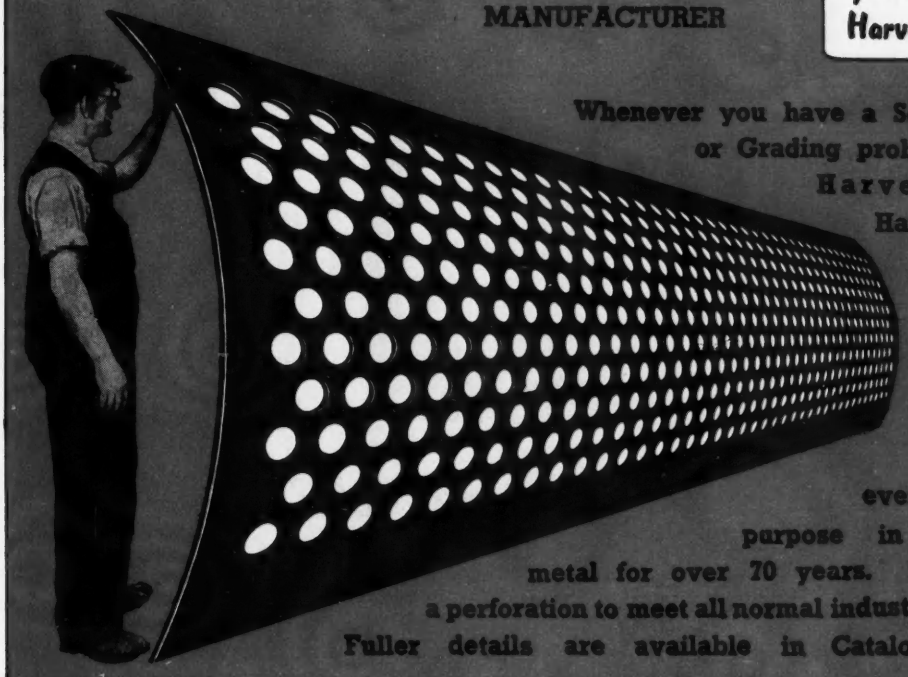

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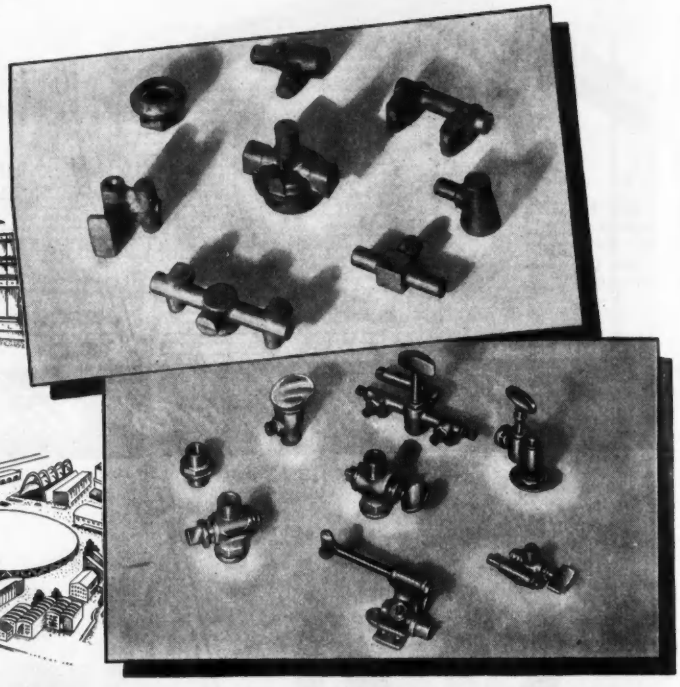

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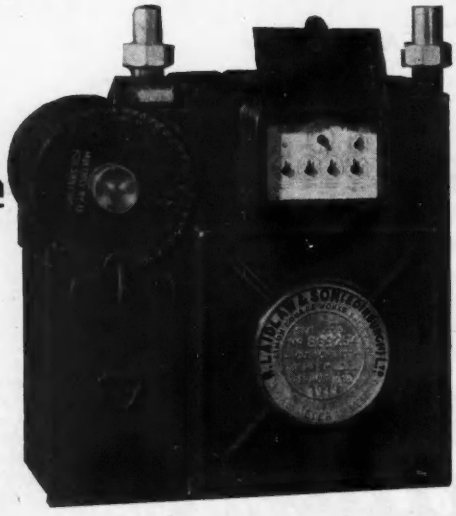

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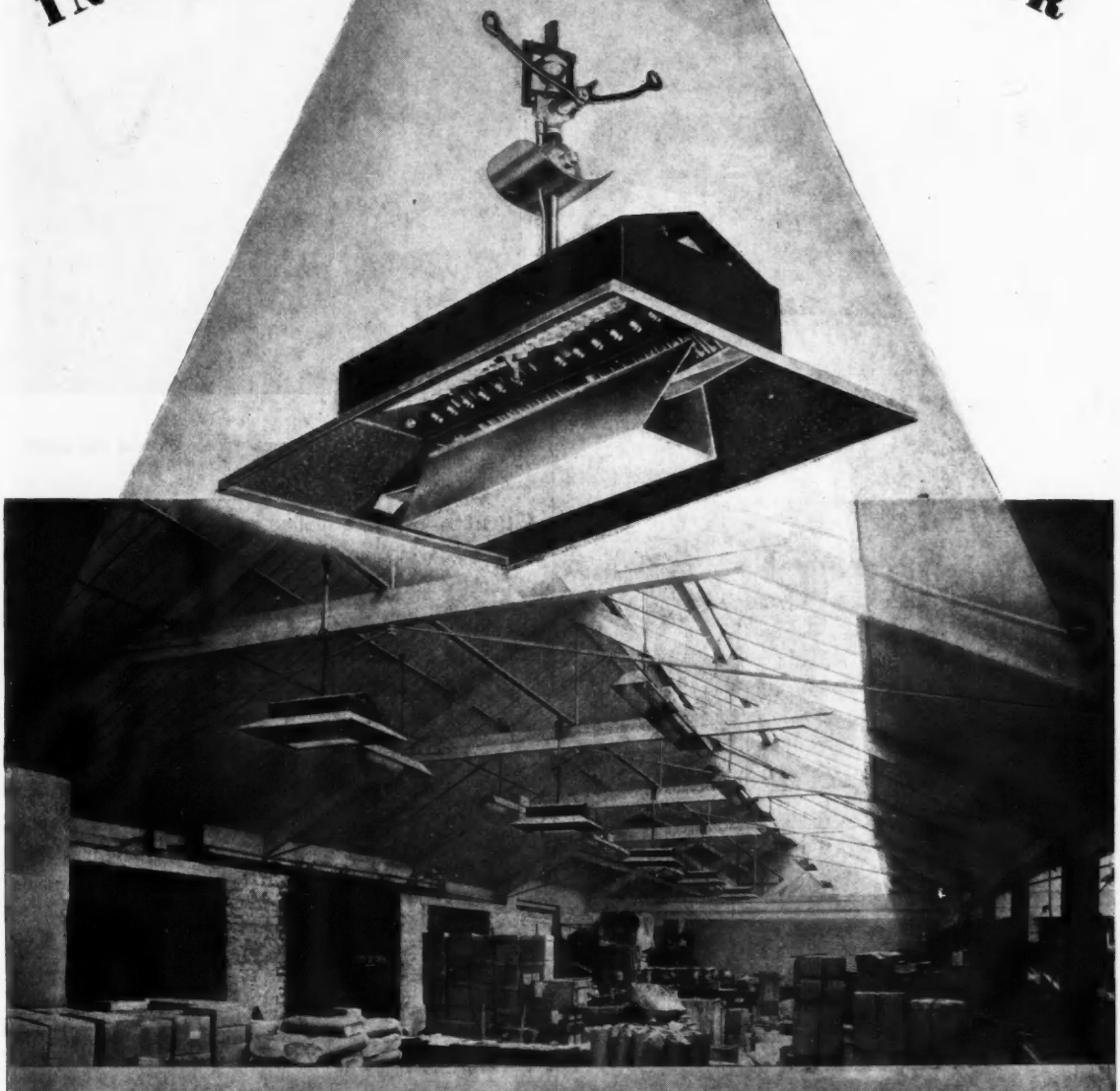

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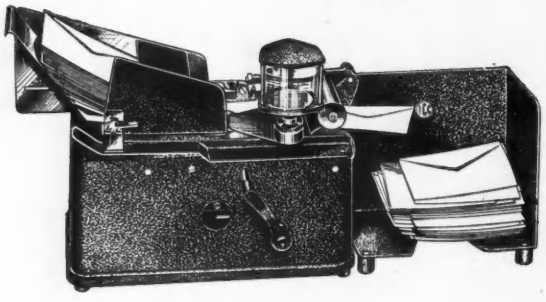

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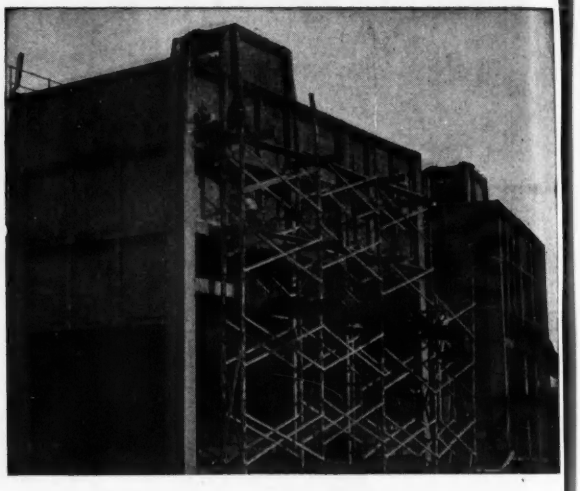

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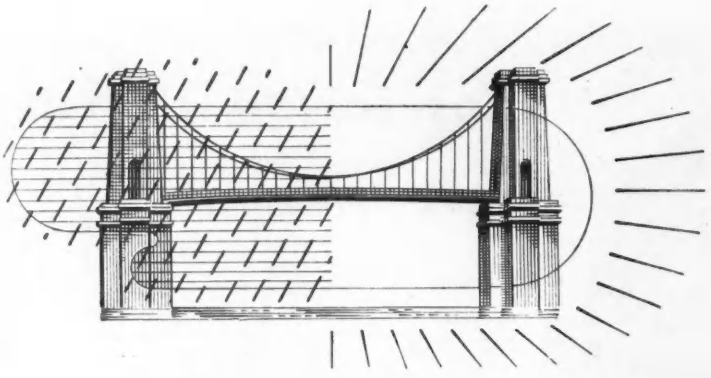

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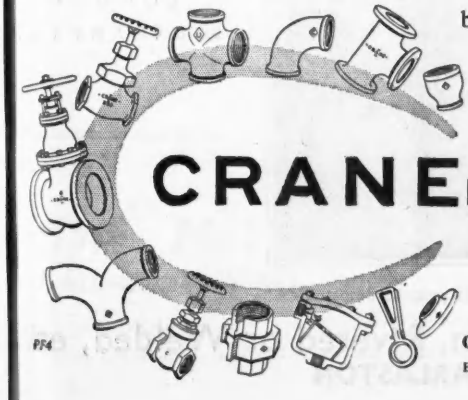

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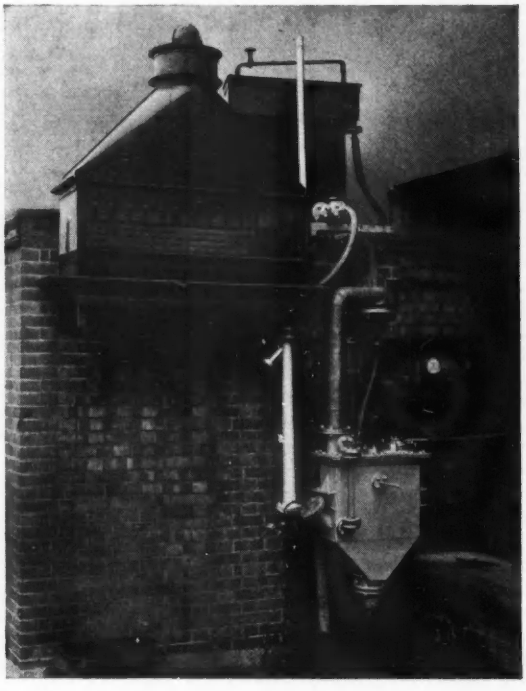

SPENT PICKLE RECOVERY PLANT

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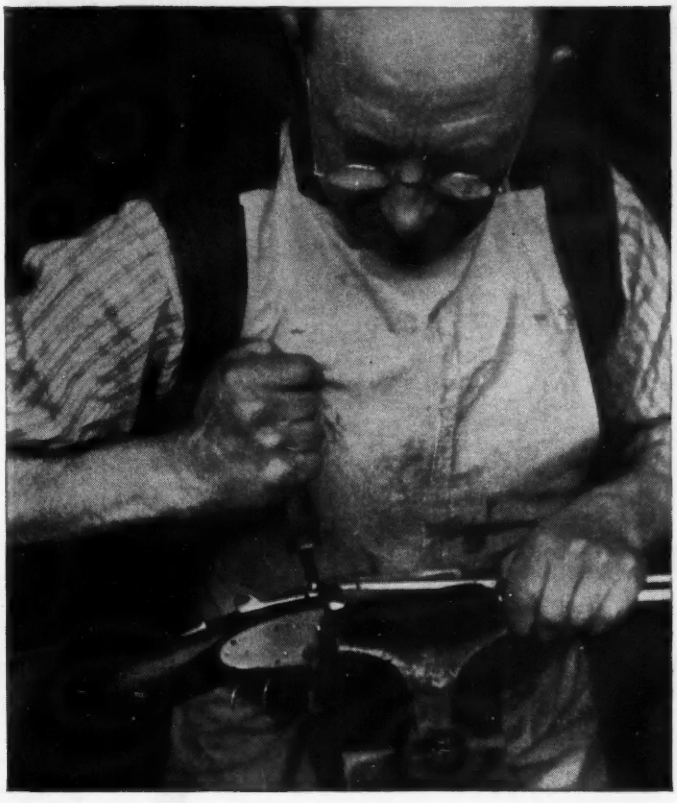

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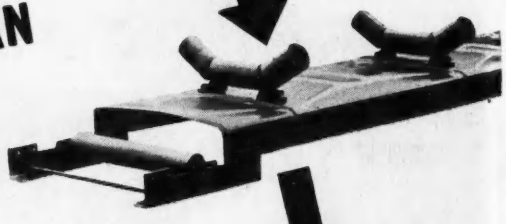
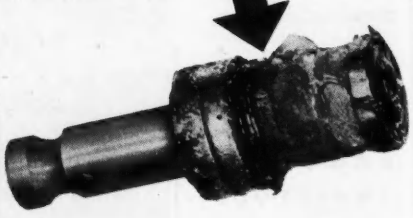


Most of the well-known conveyor makers buy their idler rollers from M&C. They value the supremely easy running, and the way the efficiency continues high. They know that friction-free labyrinth seals keep the ball bearings clean, and proof against attack even by penetrating dust. They have found the idlers have a long life — sometimes twenty years — preserve the belts, and reduce conveying costs. These conveyor specialists show by their example that it pays to use M&C idlers. *Booklet E.59 is yours for the asking.*



For permanent or temporary conveyors, in gantries, out of doors or inside factories, M&C sectional belt conveyors simplify maintenance. The spindle, shown withdrawn from its idler roller after long service, still has plenty of soft clean grease around the bearings.

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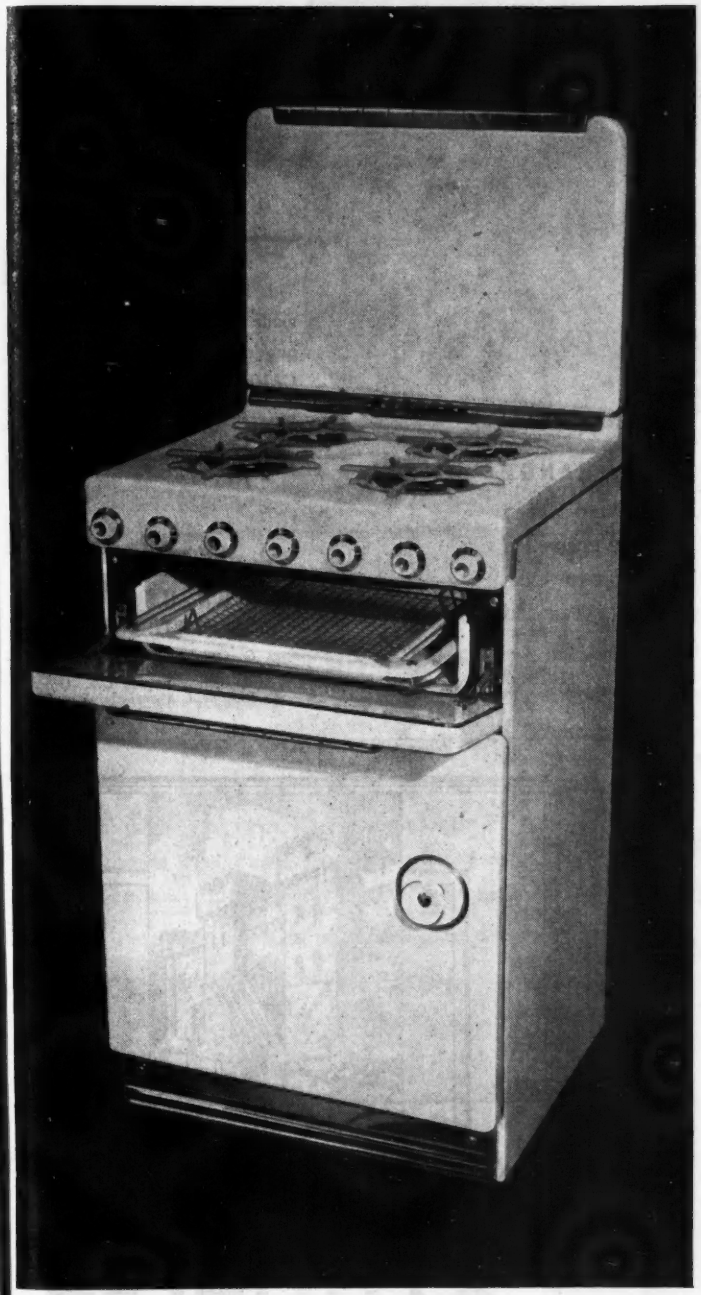

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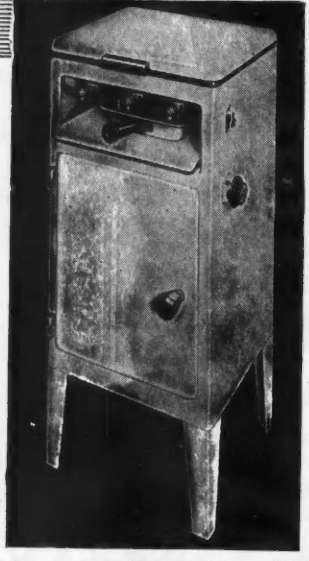

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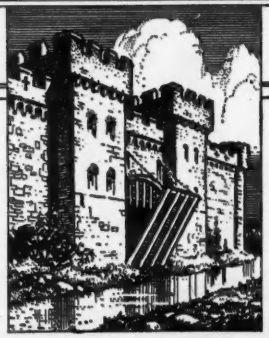

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Horizontal tube condensers in which the gas flows at right angles to the tubes, have been largely superseded by vertical tube multipass condensers, in which the gas flows parallel to the tubes. Although horizontal tube condensers have a higher heat transfer coefficient they have the disadvantage that internal cleaning of the tubes necessitates breaking and rejointing of water pass covers, and that the tubes are liable to corrosion due to air released from the cooling water being trapped in pockets.

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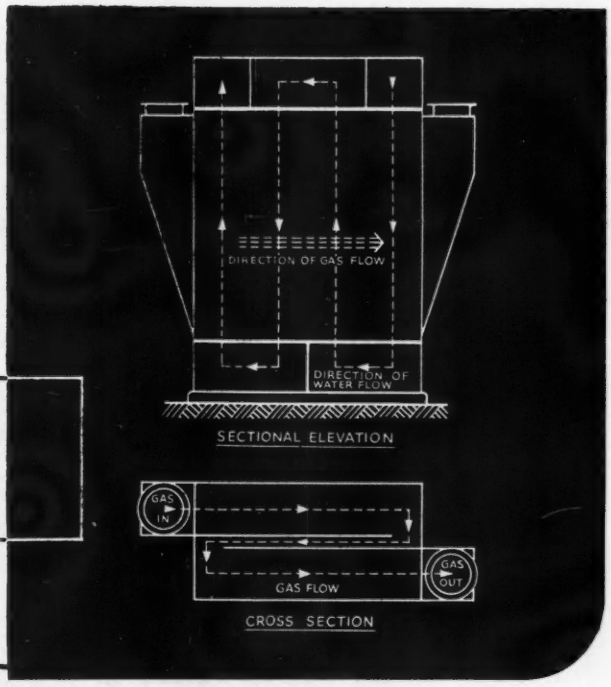

Diagrammatic arrangement of a Whessoe vertical tube horizontal gas flow condenser.

Technical publications are available on request, including "Whessoe Condensing and Cooling Plant" just published.

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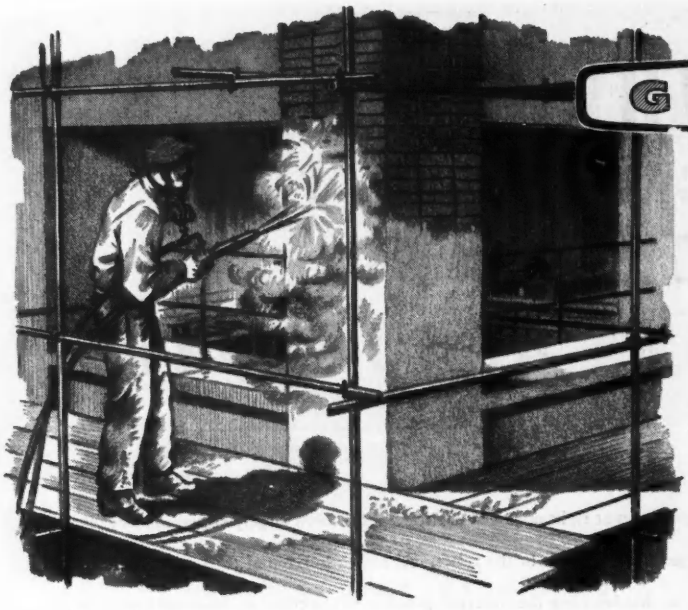

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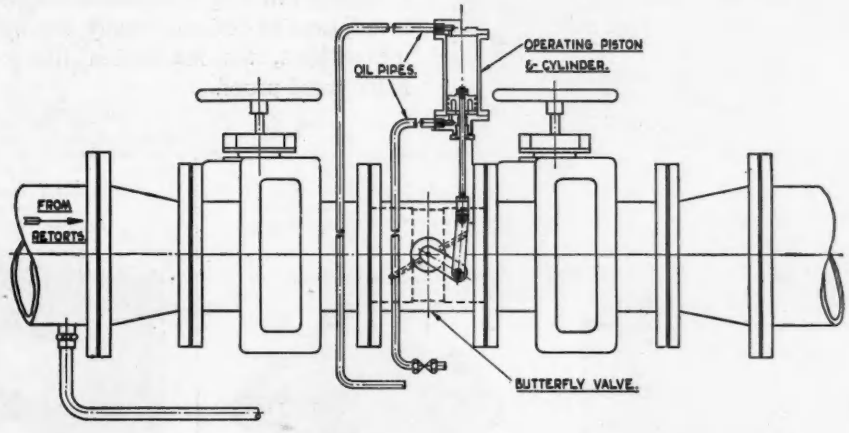

THE BVR RETORT HOUSE

GOVERNOR FIGURE 81

The initials in the title of this governor stand for Butterfly Valve Relay, which are the main component parts of this simple but very effective piece of apparatus.

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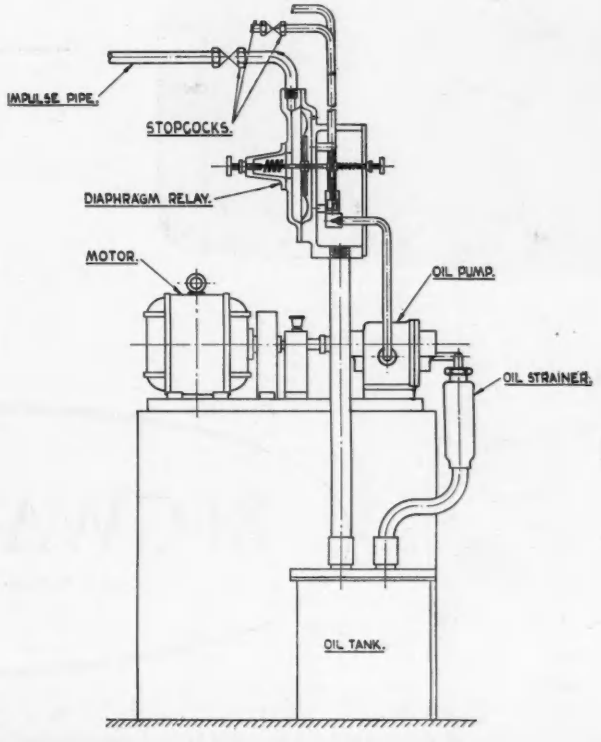

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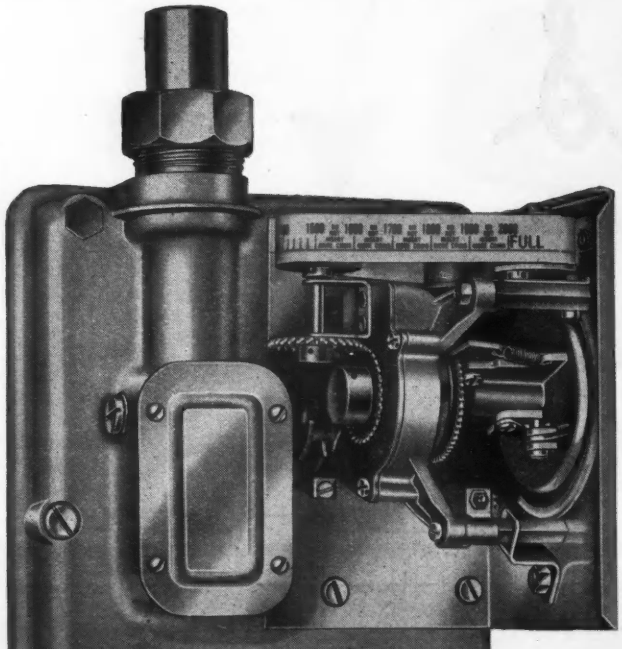

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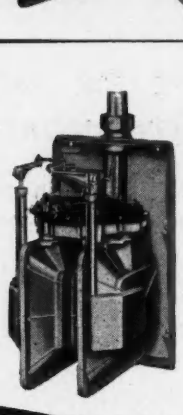

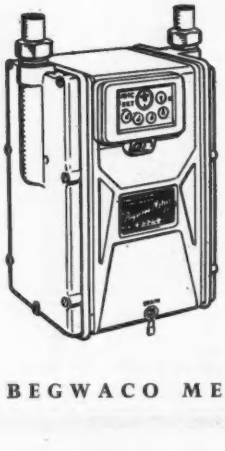

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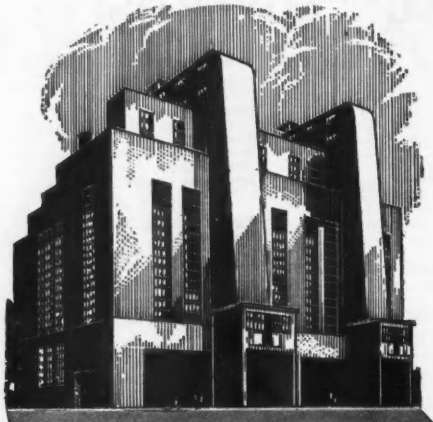

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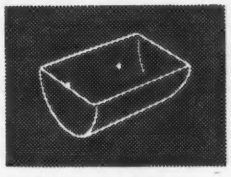

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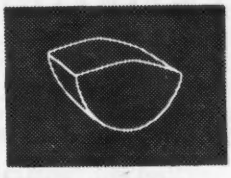

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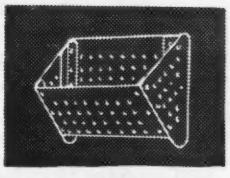

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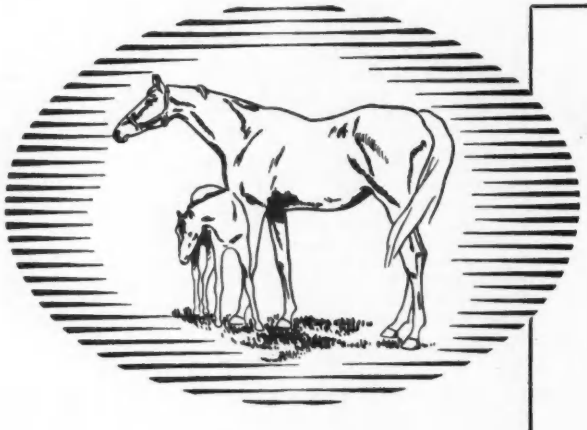

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GAS JOURNAL

VOL. 267. NO. 4604 103RD YEAR AUGUST 29, 1951

SHOWING THE FLAG

NO one is more highly qualified than Mr. Birks, whether by width of experience or force of personality, to 'show the flag' of the gas industry among our colleagues of the other Chartered Institutions of Engineers. Our abstract of his address —'Technical Advances in the Gas Industry During One Hundred Years'—to the Joint Engineering Conference omits those passages which describe plant and processes well-known to our readers, but it is not surprising either that the address itself made only passing reference to some of the very many aspects of gas engineering. There was brief mention only, for instance, of the refractory materials, the very heart and core of our gas-making plant, in which our carbonising retorts and chambers are constructed. Modern carbonising plant works at temperatures far in excess of the safe limits of any of the metallic heat-resisting substances with which our colleagues in other branches of engineering are familiar.

Retorts and coke ovens are large structures with relatively thin walls of considerable height. Their structural stability must be ensured at temperatures in the region of 1,350°C. They are subject to expansion and contraction movements of several inches as they are raised to this temperature or reduced again when stood-off for inspection and repair. They are enclosed in furnaces when need be contained and supported within steel structures the stresses in which are difficult to determine, if indeed they are determinate at all.

Refractory materials have made rapid advances in purity and heat and corrosion resisting properties since the introduction of the fireclay retort in 1820; but they remain heterogeneous materials the control of which is difficult and arduous. For not only is the substance of the retort wall called upon to maintain structural stability at a temperature within something of the order of 200°C. of its fusion point, but it is also subject to the corrosive effect of the gases and mineral impurities which are evolved from or contained within the coal with which it comes into direct contact. Much has been done within the present century, as for instance under the indefatigable guidance of Dr. A. T. Green, to elucidate the problems and perfect the routine of the control of these materials in manufacture and use. These we submit are structural problems very different from those met with in other branches of engineering, though the mechanical engineer is finding in the gas turbine that the limitations of heat resisting metallic alloys are setting definite bounds to performance.

Mr. Birks sketched briefly the progress of efficiency in gas-making processes during the period under review. A hundred years ago 'the saleable products from (the carbonisation of) a ton of coal having 300 therms of energy were 60 therms of gas, 25 therms of tar and 135 therms of coke,' a total of 73% of the thermal value of the coal. Today, 'a ton of Durham coal yields 74 therms of gas, 20 therms of tar, 165 therms of saleable coke—88% of the thermal value of the coal.' The recovery of waste heat provides for all the process and power requirements of the works. In water-gas plant the coke consumption has been reduced from 54 lb. per 1,000 cu.ft. of blue water gas at its introduction in the 1890's to 36 lb. at the present day, while again the waste-heat recovered provides the steam for power and process requirements. By reason of the concurrent improvement in the efficiency of gas and coke burning appliances the overall advance has been even greater than these figures suggest.

Leaving the gas making plant the story of the exhauster plant is of considerable interest, particularly in the evolution of the Roots type machine. Improvements in the manufacturing technique of the mechanical engineer have developed this machine into one of such precision that, driven by the stream of gas itself,

it is used as a volumetric meter. At the same time the gas industry has also adopted the centrifugal or axial flow turbo machines for propelling large volumes of gas.

The recovery and treatment of tar and ammonia are rather a matter of chemistry than of engineering, and no doubt Mr. Birks was justified in dismissing them briefly in his address to this audience. Briefly, then, tar began as a 'problem,' if not a nuisance. It became a valuable source of creosotes and other oils which formed raw material in the production of dyes and other chemical products; and it seems likely to finish as a road-making material—providing the surface needed for the smooth functioning of motor transport. The story of ammonia is more melancholy. It would only be made more so by any attempt to expand the author's brief remarks. Mr. Birks went into the evolution of dry purification at some length. This was probably not the occasion on which to expose the possibilities of future developments in this department, developments which we hope will result not only in complete automaticity but in the separation of sulphur of such purity as to make a real contribution to the national economy.

ON TOP OF THE JOB

THE mechanical engineers of Mr. Birks' audience would no doubt be most interested in his account of the rapid mechanisation of the gasworks which took place with increasing impetus during this hundred years, until today practically all solid materials are handled in and out of the works by machinery. The gas industry was quick to utilise the conveyors which made their appearance in the 1880's and 1890's. In this country the band conveyor was used for handling coal in the retort house in the early 80's—probably as early, that is, as it was used for any other purpose at all. The band conveyor has of course been enormously improved by the introduction of the rubber-covered canvas belt and the ball-bearing troughing roller.

The handling of coke, particularly of hot coke, is a problem of considerable interest in mechanical handling. Coke from the *continuous* vertical retort 'is discharged at so low a temperature that subsequent cooling is not necessary'—the residual heat being recovered within the retort—but it still retains its abrasive properties which are such a menace to the life of any metallic means of conveyance it may contact. The development of screening and grading plant is another story culminating in the modern types of vibratory screens, minimising degradation by arrangement on 'the rejection method whereby the largest sizes are taken out first.'

No one knows better than Mr. Birks what an interesting story could be told, with space and time enough to tell it, about the evolution of the correlation of the steam and power requirements of the modern gasworks with the waste-heat, or rather the surplus heat, from the gas-making processes and with available supplies of low-grade coke. He has told elsewhere how the future solution of this problem will be a system of continuous power generation, of interchange of power with the public electricity supply—exporting a surplus and perhaps importing current from the grid, to smooth out the fluctuations in the current requirements of a gasworks in which all machinery and pumps will be electrically driven.

The evolution of the gasholder is yet another fascinating story. What is to be the end of it? 'Spiral-guided holders have been constructed in the United States up to a capacity of 15 mill. cu.ft. in underground tanks and up to 10 mill. cu.ft. in steel tanks overground. In Great Britain the largest is 8 mill. in a steel tank.' Is the waterless piston type holder, which has been constructed up to 21 mill. cu.ft. capacity, the last word? Or do we look to the underground, pressure type which has been far more developed in the U.S.A. than in this country—and which does at least offer the possibility of that most desirable of all consummations, the removal of the gasholder from the landscape?

It was when Mr. Birks finally turned to the future of the industry that the gas engineer became really interested. This is not the first time he has prophesied—and his prophecies will never go unheeded. He describes the 'rather delicate balance in relating markets and prices to secure commercial stability' and points out that the gross revenue of the gas industry is more sensitive to fluctuations in national, and indeed international, price levels than any of its sister services. And he foresees that the future must see the realisation of processes of complete gasification 'in one process which will give a compact plant of high overall efficiency.'

There is just one of these dicta which we do not quite understand—that relative to the calorific value at which gas is to be distributed. We seem to see here again the conflict between coal economy and economy in the financial sense. No doubt the two tend in time to run together. The question is whether the time has come for some financial sacrifice to make the available supplies of coal go further in the immediate future. The long-term policy of the gas industry must be made to conform to an over-riding national fuel policy for the enunciation of which we are still waiting.

NEW SULPHURIC ACID PLANT

THE world shortage of sulphur which became evident late last year has been a matter of grave concern to many of our major industries. During recent months, it is true, stocks of elemental sulphur and sulphur-bearing materials have been increasing in this country; but ever rising consumption provides a demand which can by no means be satisfied by existing sources of supply (some of which, incidentally, are dollar imports). The announcement last March of plans for a new chemical plant for the manufacture of sulphuric acid from anhydrite was widely welcomed; and it was even more gratifying to learn last week that the financial arrangements have now been com-

pleted for the formation of the operating concern—to be known as the United Sulphuric Acid Company. Eleven prominent British companies—all directly interested in the use of sulphuric acid—are putting up the ordinary capital of £1,200,000 in proportion to their proposed offtake of acid. The two principal shareholders are I.C.I. and Fisons, each of whom propose to take 35,000 tons annually, with Courtaulds next at 20,000 tons. The first-named have, of course, been operating similar plant at Billingham for many years and will provide technical information for the erection and operation of the new plant. In addition to the ordinary capital, £3 mill. of first debenture stock, carrying interest at the rate of £4 7s. 6d.% is being issued at par to institutional investors. This is repayable in 15 annual instalments commencing in 1956. The debenture interest is guaranteed by the ordinary shareholders who also undertake, if necessary, to provide a further £1,200,000 of ordinary capital which could be used for the service of the debenture stock and for completing the plant.

The plant, which is to be erected at Widnes, should be completed in about four years and is designed to produce 150,000 tons of acid a year. Supplies of anhydrite are being obtained from the British Plaster Board to the extent of 240,000 tons a year from Cumberland, which may involve the opening of a new anhydrite mine. The method of production entails heavy initial capital outlay, but is understood to be relatively cheap in operation. The new enterprise has the strong backing of the Government, and while it will produce but a small proportion of the nation's requirements it may well stimulate interest in further developments in the same direction.

GAS COUNCIL PUBLICITY

THE review which we publish on a later page of this issue of Gas Council publicity during the past twelve months affords welcome reassurance that restrictions on propaganda and promotional publicity have by no means blunted the edge of the weapons employed at Gas Industry House. A state of nudity—relieved only by a small slip intimating that 'This space is reserved for gas'—has overtaken poster sites on London suburban railway stations, and Mr. Therm is taking a temporary holiday from the promotional advertisement columns of national and local newspapers, but the statistics which we quote suffice to show that what the nationalised industry inherited from the old British Commercial Gas Association, and latterly the British Gas Council, is being used to good effect. The only real outcome of the restrictions on promotional publicity has been a switch over from a policy of encouraging consumers to burn more gas on more new appliances to a campaign to encourage them to make the most of what they already possess.

The 'Use and Care of Cookers' campaign is based on the facts that of the 10 mill. cookers now in use, 2 mill. are obsolete and the other 8 mill. need regular care and attention from their users who, because of prevailing economic conditions, are not likely to be able to buy new appliances with anything like the freedom enjoyed before the re-armament programme got under way. It has been calculated that if the 2 mill. obsolete cookers could be replaced by modern appliances affording equal cooking service there would be a saving of 700,000 tons of coal per annum. Already since the war the industry has replaced over 2 mill. cookers, and wherever possible the area boards encourage the installation of new and more economical appliances, but there must remain for a long time to come a very large number of cookers which, if neglected, cannot be expected to produce good cooking results but which, if kept clean and in as efficient a working condition as their age and design will allow, will maintain and uphold the reputation which gas has enjoyed for so long.

WINTER OF DISCONTENT

THE above heading to a leading article in a recent issue of the *Electrical Times* seemed so apt that we felt we could not better it for our own comments on the B.E.A. report to the National Joint Advisory Committee and the latter's recommendations. The report reveals the disquieting, though perhaps not unexpected, fact that the gap between the supply of and the demand for electrical power this coming winter is likely to be greater than it was last—more serious, in fact, than at any time since 1947. And the situation will scarcely be eased by the concurrent shortage of coke. Last winter, with about 15% of generating capacity out of commission, the maximum electricity supplied was 11.2 mill. kW. The estimated amount of load shed was 2.2 mill. kW. During this year it is hoped that output capacity will be increased by something like 1 mill. kW; it is hoped, too, that the amount of plant out of use at any one time may be slightly less. Nevertheless, even with average weather conditions, the gap between supply and demand is estimated at 1.8 mill. kW at the peak. Cold spells may widen the gap to 2.4 mill. kW, while in extreme weather it may be as much as 3.1 mill. kW.

These estimates, however, carry an important proviso—they are subject to upward revision in the event of any dislocation of domestic solid fuel supplies. It was an irony of fate that this proviso became operative actually a couple of days or so *before* the report was published, by the imposition of statutory restrictions on supplies of coke. In consequence, it is now impossible to forecast what further widening of the gap will be brought about by these restrictions; there can be no shadow of doubt that it will be substantial.

The Advisory Committee's recommendations will be studied with care, for they are both practical and practicable and carry the approval of both the Federation of British Industries and the T.U.C. In brief, they are that industry should aim to reduce its peak load by not less than 0.6 mill. kW, to be achieved in three ways—by a variation of normal working hours, by the introduction of double shifts, and, if necessary, by night work. But it is also essential in any such scheme to get the co-operation of the domestic con-

sumers (who account for some 32% of the total load), and this is where the best-laid plans may well fall down; for the domestic consumer remembers all too clearly his experiences of last winter, when, with the best will in the world, he did actually make some effort to economise following B.B.C. 'warnings'—and still those 'cuts' came just the same. The report suggests that for all consumers the hours to which load-spreading measures should apply should be from 8 a.m. till noon and from 4 p.m. till 5.30 p.m. in every month from November till March inclusive. The electrical consumer, like the coke consumer, has little cause to look forward to the coming winter with any degree of pleasurable anticipation. It will indeed be another 'winter of discontent' and will be followed by many more—until the Government sees fit to draw up a coherent national fuel policy.

FUEL STATISTICS

THE weekly statistical statement by the Ministry of Fuel and Power shows total coal consumption at gasworks during the week ended August 11 of 405,000 tons compared with 394,000 tons in the previous week and 393,000 tons in the corresponding week of last year. The total consumption of coal by the gas industry during the first 32 weeks of this year was 16,916,000 tons compared with 16,155,000 tons at the same date last year. Coal stocks at gasworks at August 11 were 2,351,000 tons, equivalent to 3.6 winter weeks' consumption. This stock is slightly less (about two days' consumption) than at the same date a year ago. It is interesting to note the coal stocks of other major coal using industries: Electricity, 5.3 winter weeks' consumption; water, 11.5; railways, 2.0; coke ovens, 1.6; iron and steel, 3.1; and engineering and other metal trades, 5.9. Gas available at gasworks during the week was estimated at 7,973.9 mill. cu.ft. compared with 7,584.2 mill. in the previous week and 7,897.8 mill. a year ago. Gas produced in the 32 weeks of the present year amounted to 348,902 mill. cu.ft.—an increase of 21,908 mill. over the corresponding period of 1950. The output of coal during the week ended August 18 was 4,123,200 tons as against 2,579,400 tons in the preceding week. The total output of coal (deep-mined and opencast) in the first 33 weeks of this year was 138,198,200 tons—an increase of 2,774,100 tons over the amount produced in the same period of 1950. On the manpower side the statistics show that face workers at 287,600 are slightly more than a year ago though down by 500 on the week. Voluntary absenteeism was 8.22% compared with 6.49% in the previous week and 8.12% a year ago.

RAIL TRAFFIC MOVEMENT

REPRESENTATIVES of the Association of British Chambers of Commerce and of the Federation of British Industries are discussing general transport problems with the Railway Executive, with special reference to the prospects of traffic movement by rail during the coming autumn and winter. All possible measures deemed likely to facilitate railway operation are being examined, the main concern apparently being that of retaining sufficient key operating staff, a difficulty said to be accentuated by higher rates of wages and more attractive conditions of service in many outside industries. On the staff side the Railway Executive is seeking deferment of employees liable for military service; recruiting labour from Northern Ireland and Italy; discussing with trade unions the temporary resumption of the 48-hour week while maintaining the principle of the 44-hour week; improving lodging allowances; retaining staff due for retirement; making increasing use of available Road Haulage Executive resources; and considering other special emergency measures.

On behalf of industry and commerce the representatives have expressed a readiness to co-operate wherever possible on any measures designed to facilitate railway operation, and the Railway Executive, appreciating this willingness, has mentioned examples of directions in which forward planning might start forthwith so that during the winter users could assist materially in the special efforts being made. The examples are: (1) organising despatches to secure where possible full wagon loads—*i.e.*, using wagons to maximum capacity; (2) regulating despatches by directional flows—*i.e.*, forwarding to coincide with flows of traffic to specific destinations, and nominated loading—*i.e.*, naming certain days in the week for the despatch of traffic to certain destinations, in cooperation with local railway goods agents, with a view to securing maximum through train working; (3) the avoidance wherever possible of ordering or despatching in quantities beyond capacity to discharge wagons currently; (4) ordering of empty wagon stock in strict relation to anticipated forwarding; and (5) acceleration in discharge of wagons, including at week-ends. According to local circumstances there may be other directions in which the organisations can co-operate with the Railway Executive and it is suggested that members should review their arrangements and help to ensure that all practicable steps along the lines desired are taken.

CACOPHONY

THE suggestion has been seriously advanced that some means should be devised of giving warning of impending power cuts. Far be it from us to pour cold water upon so laudable an idea; but one can foresee certain obvious difficulties in giving audible signals that will be generally heard and rightly interpreted in these days when the air is already rent from dawn till dusk with many strange and discordant notes. Factories blare out in varying keys their starting and knocking-off times; the ex-air raid siren announces fire calls. If we live near a port or river other kinds of hooter and siren offend the ear. Jet aircraft scream overhead; tramcars clang; even our railway engines have lately added to their ordinary noise a distinctly American tendency to hoot. The local institution calls its inmates to meals with a tolling bell, while the whole is orchestrated by the normal contributions of impatient motorists.

Amidst all this cacophony what noise is left to denote the power cut? Do we revert to the warden's whistle or the muffin man's hand-bell? Indeed, it seems that there is scarcely any distinguishable sound left except perhaps the tom-tom; and the latter immediately brings to mind an obvious alternative to the audible warning—to wit, a visual signal. What could be more practical than a watcher on every factory roof with telescope trained on the belching chimney of the local power station? What easier than a series of punctuated puffs from the smoke-stack to indicate the intention to shed the load? After all, the domestic consumer does not matter if he cannot see the power station chimney. He can always switch over to coke. Or can he?

Letter to the Editor

GAS COOLING AND WASHING

DEAR SIR,—With reference to Mr. J. E. Cullingworth's letter published in the *Gas Journal* of August 22 referring to the use by the North Thames Gas Board of surface evaporation for gas cooling, I should like to point out that well irrigated atmospheric condensers of the type described in my paper on 'Gas Cooling with Aqueous Condensation' to the Institution of Chemical Engineers, which have been installed by the North Thames Gas Board, have fully justified themselves under conditions for which they are suited—*i.e.*, where adequate ground space is available and the surroundings are not too built up to allow adequate access of air currents. Among the advantages experienced are very complete cooling of the gas, great saving in cooling water requirements, freedom from blockages, ease of control, and low maintenance requirements. No great nuisance has been experienced from vapour clouds, but further experience in this respect will be obtained when the large atmospheric condensers on the new carburetted water gas plant at Beckton are at work and dissipating upwards of 30 mill. B.Th.U. per hour.

Yours faithfully,

L. SILVER.

Fulham Gasworks, North Thames Gas Board.
August 27, 1951.

Personal

WEST MIDLANDS APPOINTMENTS

The West Midlands Gas Board announces the following appointments: **R. S. Jones** (Distribution Superintendent, Letchworth District, Eastern Gas Board) to be Distribution Superintendent, Newcastle-under-Lyme District. **H. G. Passmore** (Senior Engineering Assistant, Leamington District) to be Assistant Engineer and Manager, Willenhall District. **S. H. Lawrence** (District Engineer, Walsall District) to be Engineer and Manager, Walsall District. **W. E. Dobson** (Second Engineering Assistant, Saltley Works, Birmingham District) to be First Engineering Assistant, Saltley Works.

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Sir Henry Wilson Smith, K.C.B., K.B.E., has been appointed a director and vice-chairman of Stephenson Clarke, Ltd., and has joined the board of Associated Coal & Wharf Companies, Ltd.

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For reasons of health **Mr. John Philip Stephenson Clarke** has asked to be relieved of the responsibilities of the chairmanships of Stephenson Clarke, Ltd., and Associated Coal & Wharf Companies, Ltd., and of his membership of the management committee of the Powell Duffryn Board. They have with regret acquiesced in this request, but are pleased to announce that he will continue to serve the group as a director. **Mr. Edwin William Ganderton** will take Mr. John Clarke's place upon the Powell Duffryn management committee, and as chairman of Stephenson Clarke, Ltd., and Associated Coal & Wharf Companies, Ltd.

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The City and Guilds of London Institute for the Advancement of Technical Education, announce the appointment of **Mr. J. W. Voelcker,** A.C.G.I., B.SC., A.M.I.E.E., as Secretary of the Institute to succeed **Mr. G. C. Stephenson,** A.C.A., who has now retired, but who will continue to help and advise in the work of the Institute. Mr. Voelcker was educated at Rugby, where he was among the first members of the Science Side. After serving in the first world war with the Royal Engineers, he gained a Governors' scholarship to the City and Guilds College, and after post-graduate study leading to a Master's degree and some teaching experience at the Massachusetts Institute of Technology, he returned in 1925 to join the English Electric Company, Ltd., with which he remained until this present appointment.

Obituary

Mr. Alexander McDonald, who started his career with the Dundee Gas Department, later becoming manager of Inverbervie gasworks, died on August 19 at Dundee. From Inverbervie he went to Irvine as assistant manager and from 1919 until his retirement in 1945 he was gas manager at Prestonpans and Tranent. In the 1930's he was elected Provost of Prestonpans and held that office for six years. He also became a J.P. for East Lothian, a member of East Lothian County Council, and chairman of the East Lothian Water Board. He was a past-president of the Scottish Junior Gas Association and of the Waverley Association of Gas Managers. Mr. McDonald is survived by a son, who is works superintendant at the Musselburgh gasworks.

Diary

Aug. 30-Sept. 13.—Engineering, Marine, and Welding Exhibition, Olympia. (Gas Council exhibit).

Sept. 4.—East Midlands Gas Consultative Council: Victoria Station Hotel, Nottingham, 11.30 a.m.

Sept. 4.—South Eastern Gas Consultative Council: Goring Hotel, Victoria, 2.30 p.m.

Sept. 5.—Industrial Gas Development Committee: Southern Gas Board Offices, Portsmouth, 9.30 a.m.

Sept. 6.—North British Association of Gas Managers: Annual General Meeting, Ayr. (Golf and bowling functions, Sept. 5; Excursion, Sept. 7).

Sept. 7.—Manchester and District Section, I.G.E.: Visit to Newton Chambers & Co., Ltd., Thorncliffe.

Sept. 10.—West Midlands Gas Consultative Council: Dudley Room, Queen's Hotel, Birmingham, 2.30 p.m.

Sept. 11-13.—Irish Gas Association: Annual General Meeting, Dublin. Business meeting, Alliance and Dublin Consumers' Gas Company's lecture theatre, D'Olier Street, 10.15 a.m. Afternoon visit at Guinness' Brewery. Annual Dinner, Royal Hibernian Hotel, 7.30 p.m. Sept. 12.—Coach visit to Greystones, 10 a.m. Sept. 13.—Golf competition.

Sept. 17.—Eastern Gas Consultative Council: Connaught Rooms, Great Queen Street, 2 p.m.

Sept. 18-21.—Association of Public Lighting Engineers: Annual General Meeting and Conference, Brighton.

Sept. 19.—South Western Gas Consultative Council: 34, Bridge Street, Taunton, 11 a.m.

Sept. 19.—Wales and Monmouthshire Section, Institution of Gas Engineers: Autumn Meeting, Llanelly.

Sept. 20.—Gas Council Commercial Managers' Committee: Edinburgh, 10 a.m.

Sept. 21.—Institution of Gas Engineers (North of England Section): 'Some Aspects of Gas Manufacture Practice in the North Thames Gas Board Area', Dr. J. Burns, G.M., Chief Engineer, North Thames Gas Board. Seaburn Hotel, Sunderland.

Sept. 27.—North Thames Gas Consultative Council: Westminster City Hall, Charing Cross Road, 2.30 p.m.

Sept. 29-Oct. 4.—International Bakers and Confectioners Exhibition, Olympia. Gas Council Exhibit.

DANISH FUEL DIFFICULTIES

The Danish fuel situation continues to cause anxiety, a feature being an acute shortage of coke, but the authorities maintain that they will be able to implement rations. Domestic rationing has been supplemented by a system of control of industrial fuel consumption, under which no firm will be allowed to buy more than one month's normal supply at a time, and firms which have more than one month's stock in hand must use up the excess before being allowed to buy more.

At the end of June, coal shipments from Poland to Denmark were 250,000 tons behind schedule. Danish imports of solid fuel in the first five months of the year were as follow: Coal, 1,449,767 metric tons (of which 466,818 tons were from the United Kingdom and 780,546 tons from Poland); coke, 477,339 tons (U.K. 112,367 tons, Germany 325,180 tons); coke breeze, 122,198 tons; briquettes, 11,346 tons.

Reading Town Council has suggested to the Southern Gas Board that the new gasholder to be erected at the confluence of the Thames and Kennett should be painted a light colour to preserve local amenities; and that existing holders should be similarly painted.

Five Yorkshire Plants producing ovoids for household fuel uses are to be re-opened to meet the fuel shortage. The plants to be restarted are at Rockingham and Old Silkstone, in the Barnsley area; Waleswood, near Sheffield; Upton, near Pontefract; and Whitwood, near Castleford. Two of them are expected to be operated privately. Ovoids are produced from slurry from coal washeries, briquetted with pitch. Maximum production at these plants is about 25,000 tons a month.

The Collapse of three brick arches at Tunbridge Wells gasworks, which resulted in the death of two men, was described by the coroner as 'a mystery.' He did not think that the collapse would ever be adequately explained. So far as he could see there was not the slightest evidence to suggest criminal neglect. The jury returned a verdict of accidental death on Dick Rosa and William Albert Gilliland, who were buried by the fall. The arches were being built over a bed of retorts. The general foreman for the contractors, Mr. Thomas Meynell, said that he could not explain the collapse. He thought there must have been a split in the brick work.

Dissatisfaction is Expressed by the Stockton-on-Tees Town Council with a concession relating to gas charges offered by the Northern Gas Board. The Board announced that the supplementary charge of 1¼d. per therm would in future not apply, after the first 30 therms per quarter. The Board stated that this concession would cost £35,000 annually. The Town Council pointed out that most prepayment meter consumers used less than 30 therms quarterly and would therefore receive no benefit. The Council is to pursue the matter further. The Council is also resisting the Board's new system of charging for street lighting by regarding each lamp as a separate consumer, instead of classing each town or area as a complete unit.

Big U.S.A. Sulphur Find

The discovery of huge sulphur deposits —perhaps sufficient to end the present world shortage within two years—was announced last week. It is in the marshes of the Mississippi delta, about 100 miles south-east of New Orleans. It was found by a company which was prospecting for oil, and plans were immediately made by the Freeport Sulphur Company to build a plant to produce 500,000 tons a year on a site occupying 1,000 acres. The plant will cost between £3 mill. and £5 mill. and should be in production by 1953.

Commenting on this discovery, Dr. James Boyd (Director of the Bureau of Mines and head of the Defence Minerals Administration) said: 'This means there is now in sight enough new production of this essential mineral to solve the free world's sulphur shortage.'

News in Brief

Powell Duffryn, Ltd., announce that as from August 21 the address of the registered office of the company will be 19, Berkeley Street, London, W.1 (Tel. No. Grosvenor 3801). The previous registered office at 40, Lime Street, London, E.C.3, will in future be the city office of the company. The transfer office of the company will continue at 17, Overton Road, Sutton, Surrey.

The British Electricity Authority and the unions concerned have agreed that the dispute over wage increases for power station workers should be referred to the Industrial Court for Arbitration. The dispute arises from the unions' refusal of an offer of a 5% increase in wages. The unions' claim is for a 10% increase. Meanwhile it is not expected that the unofficial protest action of those workers who have put a ban on overtime and are working to rule, will be brought to an end until the result of the arbitration is known. At present about 5,000 men at 30 power stations are involved. Maintenance and repair work is falling into arrears at some stations and it is feared that this will result in earlier and more frequent power cuts.

A New Power Station is to be built at Marchwood, near Southampton. It will have 480,000 kW capacity.

It Is Not Yet Decided whether the coke restrictions lately re-introduced in Great Britain will apply in Northern Ireland. An official of the Ministry of Commerce observed that for almost a year now coke had been scarce in Northern Ireland, and rationing would hardly make any difference.

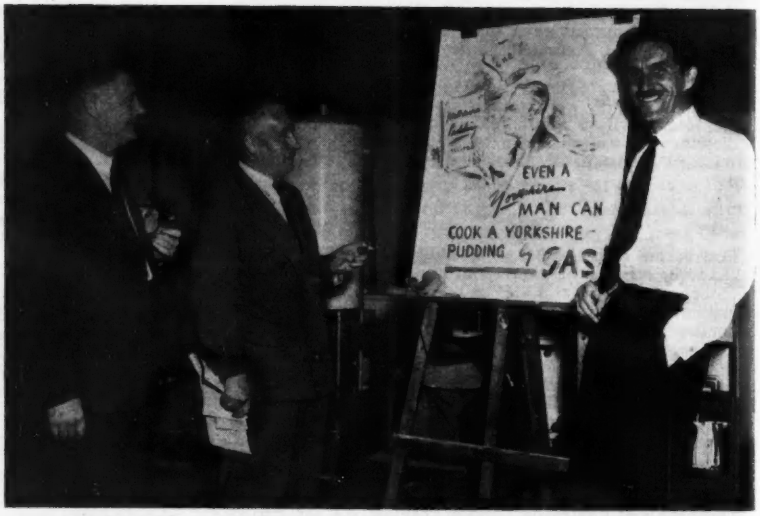
British Sulphuric Acid Plants Nearly Ready

The first three of 18 sulphuric acid plants under construction in Britain are expected to be in production in October at Grimsby, according to the Ministry of Materials, which has taken over the responsibility for sulphur supplies from the Ministry of Supply. Two more will start production in the same district next May, while of the remaining 13 plants, two will be ready at King's Lynn between November and December and four in Flintshire early next year.

Most of the plants will use pyrites, though a few will use the anhydrite process.

It is expected that by 1954 the total of sulphuric acid produced in Britain by these processes will have risen from 280,000 tons to 900,000 tons. Imports should be reduced by 50% by 1956.

TAUNTON INDUSTRIES FAIR



A USEFUL idea by the South Western Gas Board is the sectionalised exhibition stand which is so constructed that it can be fitted into a variety of different areas by a simple rearrangement of the walnut veneer panels to suit the dimensions of the particular site.

At the Taunton Industries Fair (August 4-11), the Southern Divisional exhibition stand was arranged in co-operation with the Taunton sub-division on a site measuring 50 ft. by 20 ft., which was large enough to accommodate the exhibit in its full extent. Two special features attracted special attention—one being a regular programme of gas films and the other (illustrated here) a lightning cartoon artist who sketched topical subjects with a slight gas 'flavour.' Our photograph shows (left to right) Mr. L. P. Ingram (Manager of the Taunton sub-division) with Mr. C. H. Chester (Chairman of the South Western Gas Board), who is the subject of the artist's particular sketch at the moment.

Ammonium Sulphate from Flue Gases

AMONG the exhibits to be shown on the D.S.I.R. stand at the Engineering Marine and Welding Exhibition (Olympia, August 30 to September 13) is a model demonstrating the operation and control of a plant for the recovery of ammonium sulphate and sulphur from power station flue gases. The plant has been developed at the Fuel Research Station, where, after preliminary work with a 1,000 cu.ft./hr. model, a 25,000 cu.ft./hr. installation is now in operation.

The power stations that have so far scrubbed flue gases have used methods which produce calcium sulphate as a solution in water or as a sludge. As no proved economic way has yet been discovered of disposing commercially of this product in the form in which it is obtained it has been discharged into a river or dumped at sea. By comparison, the scrubbing by the ammonia process would yield mainly ammonium sulphate with some sulphur both of which are valuable products.

The method being tried at the Fuel Research Station is the Fulham Simon-Carves process, which was tried in preliminary tests before the war in a pilot plant at the Fulham generating station. A concentrated solution containing ammonium sulphate, sulphite, bisulphite, thiosulphate, etc., is used to scrub the flue gases, and ammonia in the form of concentrated gas liquor is added to the solution at a rate corresponding to the absorption of sulphur dioxide.

The concentrations are kept constant by running liquor off from the scrubber when necessary and replacing it with water. The liquor is filtered and heated to 200°C. in an autoclave with a small amount of sulphuric acid, and on decomposition gives ammonium sulphate and a little elemental sulphur.

During pilot plant operation it was found difficult to control the composition of the liquid in the scrubber in such a way that neither ammonia nor sulphur dioxide was lost with the scrubbed gas. A vapour pressure recorder, designed by the originators of the process to overcome this difficulty, is included in the equipment at the Fuel Research station, and conditions have been found that will give satisfactory control.

Under conditions in 1950, the estimated cost of producing ammonium sulphate by this process was much greater than the market price for this product, but it may be that with change in market conditions, the difference in cost will be reduced.

Increased Lighting Charges

Bridgnorth Town Council have agreed to pay the West Midland Gas Board an increased charge for the Borough's street lighting, after discussing in committee a letter from the Board stating that the Board proposed to increase the charge for an interim period retrospectively. From March last the Town Council agreed that the Town Clerk should inform the Board that they were prepared to pay the increase with effect from August 14. The proposed increase was from the present charge of £819 14s. 4d. per annum to £1,202 10s. 4d. per annum, being equivalent to an increase of £2 15s. 11d. per lamp yearly.

The Council added that they were prepared to pay the increase, subject to the Board giving an undertaking that all lights which were intended to be lit were in fact lit during the appropriate lighting hours.

North Eastern Consultative Council Appointment

The Minister of Fuel and Power has appointed Mrs. P. Keyzer, of Wentbridge, near Pontefract, to be a member of the North Eastern Gas Consultative Council.

COMPANY NEWS

SKEFKO

The directors of the Skefko Ball Bearing Co., Ltd., announce that they are giving consideration to the lodgment in the near future of an application to the Capital Issues Committee for consent to a rights offer of 400,000 5s. ordinary shares on the basis of one for every eight ordinary stock units held.

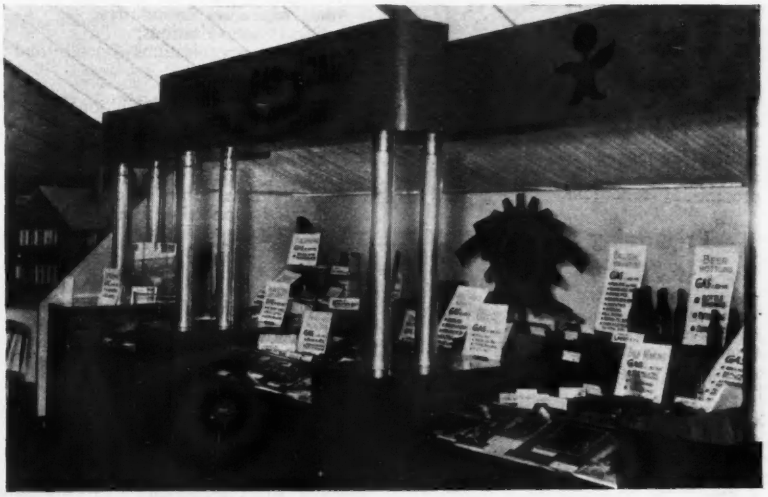
TUBE INVESTMENTS

The approval of shareholders in Tube Investments, Ltd., is being sought to approve an issue of ordinary shares for the purpose of raising the £650,000 to be paid to Stewarts & Lloyds, Ltd., as the consideration for cancelling the special rights attaching to the company's liaison shares. A direct payment of the money, the company is advised, cannot be effected without great complication and the approval of the court. Accordingly, the company is to issue to Helbert Wagg & Company, Ltd., or its nominees, for cash at par, 118,182 £1 ordinary shares.

These shares are being placed privately by Helbert Wagg & Company at £6 11s. each. This will produce £774,092, which, after deduction of the subscription price of £118,182 and 1s. per share commission (£5,909), will leave £650,001, out of which Helbert Wagg & Company will pay £650,000 to Stewarts & Lloyds, Ltd. Against this payment, Stewarts & Lloyds has agreed to deliver written consent to the cancellation of the special rights attached to the liaison ordinary shares which it holds and to the conversion of these shares into ordinary stock.

Meetings of Tube Investments stockholders to sanction the arrangements are called for September 3.

INDUSTRIAL DISPLAY AT SUNDERLAND



CONSTRUCTED by the staff of the Sunderland Division of the Northern Gas Board for the local Festival of Britain Industries Exhibition, which was attended by over 50,000 people, the stand illustrated here featured the products of various local industries in the manufacture of which gas is used; also photographs of gas fired manufacturing plant in the area. The exhibit provoked considerable interest.

Following the exhibition the Sunderland Division gave a luncheon to some thirty local industrialists who were taking part. The guests were welcomed by Mr. J. R. Bradshaw (Vice-Chairman of the Board).

Mr. W. O. Kirkwood (Sunderland Divisional General Manager) gave a brief account of the history of the Sunderland undertaking, stating that the output of the Sunderland unit in 1950 was 2,861 mill. cu.ft. per annum, an increase of 92% over 1938, without any corresponding increase in manufacturing plant. Approximately 40% of the present output was used for industrial and commercial purposes.

A vote of thanks to the Sunderland Division of the Northern Gas Board was proposed by Mr. J. A. Brown (Chief Engineer to the Washington Chemical Company, one of the largest Industrial Consumers in the district).

The Use and Care of Cookers

Gas Council Publicity Switches its Appeal

MR. THERM has disappeared temporarily from the hoardings and the advertisement columns of the national and local newspapers, but Gas Council publicity has by no means come to a standstill. Indeed, when the gas history of 1951 comes to be written it will be found that Gas Industry House has been busier than ever. Due to various restrictions on propaganda and promotional publicity the main concentration has been on trade and technical journals, and within recent months approval has been secured for publicity concentrated on women's journals dealing with the use and care of gas cookers.

Quite briefly, the theme is that there are over 10 mill. cookers in use in the homes of Great Britain. Two mill. of them, as Colonel H. C. Smith, Deputy Chairman of the Gas Council, explained at the Press conference on the occasion of the release of the first annual report, are more or less obsolete and urgently need replacement. The other 8 mill., owing to the defence programme, the shortage of steel, and all the other handicaps that beset us, will have to remain in service for an indefinite period. New cookers will become even more difficult to buy, and housewives must be persuaded to take care of what they have got, to keep their cookers clean and in an efficient state of repair. Good cooking is impossible in a neglected and dirty cooker, but a clean cooker, no matter how ancient it is, can be relied upon to render quite reasonably good service in its old age. It is fair to say that the prestige and national status of gas is being maintained in a satisfactory manner bearing in mind the unavoidable difficulties that exist under present-day conditions.

Brightening the Outlook

The 'Use and Care of Cooker' campaign is well under way and the publicity material that will be going out in the very near future will do much to brighten the drab outlook of the approaching winter.

During the past 12 months enquiries received and dealt with by the Gas Council totalled over 17,000, including professional and public enquiries concerning industrial, commercial, and domestic gas installations. About half of these enquiries emanated from the permanent gas exhibit at the Building Centre, Conduit Street, and in total a very considerable increase has been recorded compared with past figures. Interested manufacturers are now advised each month through the Society of British Gas Industries so that the utmost practical value is being reaped. In the same period the Gas Council was responsible for displays at 12 national exhibitions involving an aggregate attendance of 2¼ mill. visitors and 15,000 firm enquiries. The Exhibitions Section of the Publicity Department is also responsible for advice and designs in respect of provincial shows and a variety of special displays. Generally speaking, work on exhibitions has greatly increased and further expansion is envisaged.

In the past year 7,000 films were distributed solely by the Films Section. Audience appreciation exceeded 3 mill. and distribution was located to 24 sections, *viz.*:

Schools, colleges and technical institutes;
Government Departments and Ministries;
Local Government Departments—*i.e.*, medical officers of health, chief education officers, engineers and surveyors, welfare officers, and librarians;
National Coal Board;
Railway Executive;
British Electricity Authority;
Army, Navy, and Royal Air Force;
Commonwealth Governments;
Economic Co-operation Administration (United States Embassy);
British Embassies abroad and commercial attaches;
B.B.C. Television;
Central Office of Information;
British Film Institute;
Scientific Film Association;
H.M. Prisons;
Co-operative Wholesale Societies;
Cadet training ships at sea;
Hospitals—nurses in training;
Adult education in industry;
Religious organisations;
Women's organisations—social and welfare;
Youth organisations;
National and local exhibitions;
Film societies.

There are 960 copies of 27 different gas industry films in constant circulation through the film library as distinct from a variety of supporting films. The distribution figures indicate a tremendous increase over all past records and, with the progressive introduction of new films, it is anticipated that an audience evaluation of 5-6 mill. should be reached within the next two years. With the exception of the C.O.I., the gas industry is a largest distributor of sponsored films.

Overseas Distribution

Overseas distribution is being explored and there is reason to believe that there is room for considerable expansion in this direction. A commercial version of the Gas Council film 'Method and Madness,' has lately been shown throughout the country. In the course of its run it will have been shown in at least 1,000 cinemas over a long-term period involving an audience of not less than 6 mill. New films in project hot water, smoke abatement, the life of Murdoch, a colour cartoon, and a topical history of the gas industry.

Some 165 lectures were given by the lecturer attached to the Publicity Department to varied audiences totalling 20,000 during the 12 months. The subjects included 'Gas as a Public Service,' 'The Gas Industry and the Community' (by-products), 'The Development of the Gas Industry,' 'Making the Modern Town' (smoke abatement), and 'Modern Home Making.' In many cases the lectures were illustrated by film strips prepared and edited by the lecturer.

Photographic Section

The photographic section at Gas Industry House has been completely reorganised. Thousands of photographs accumulated over past years have been classified into (a) industrial, (b) commercial, (c) semi-commercial, and (d) domestic applications. Domestic appliance manufacturers have cordially co-operated with the section whose aim is to build up a library of 10,000 individual items. Industrial and other aspects are being collated in a similar fashion so that the two main sections will comprise a complete catalogue which will be distributed freely to all who are interested—*e.g.*, the gas industry, the manufacturers, the Press, etc.

Copies of negatives are available on request for a variety of purposes, in which connection it must be remembered that the Publicity Department is very dependent upon such material in association with exhibitions, publications, Press layouts, posters and displays, films, and Press notices.

Over 40,000 posters, showcards and other similar material were issued, primarily to the area boards, during the past year.

Work involved in the conception, production, and distribution of Gas Council publications has increased considerably since the industry was nationalised. No publication is proceeded with until a full appreciation of subsequent distribution has been established in co-operation with the area boards; nevertheless, a distribution approaching 2 mill. was achieved during the year.

Sulphur from Slag

Speaking to members of the British Association in Edinburgh last week, Mr. F. D. Richardson (Imperial College of Science and Technology) suggested to the Chemistry and Engineering Sections that the 7 mill. tons of blast furnace slag made annually in Britain were a potential source of 100,000 tons of sulphur.

A surfeit of sulphur was a headache to the metallurgist and had to be eliminated from the iron made in a blast furnace by using large quantities of basic slag.

He thought it might become practicable to recover the sulphur in molten slag by blowing air or oxygen through it.

Company News

CORK

The directors of the Cork Gas Consumers' Company have declared an interim dividend at the rate of 3%, payable on August 31.

GEORGE KENT

The forty-fourth annual general meeting of George Kent, Ltd. (engineers for measurement and control of fluids), was held on August 24, in London, Commander P. W. Kent, R.N. (chairman and joint managing director), presiding. The following is an extract from his circulated statement:

During the financial year ended March 31, 1951, we have once more exceeded our previous output, and for the first time in our history the total value of our despatches has exceeded the £3,000,000 mark. Our order values still show a mounting total.

Although the trading profit has increased by £45,000, the net profit carried to the appropriation account is lower than last year by £28,000. This is mainly due to an increase of £51,000 on the taxation item, a further provision of £8,478 for deferred repairs, and an increase of £7,000 in the depreciation item.

We propose that this profit with the balance from last year, in total £302,379, should be applied to provide an increase of £12,000 to the stock reserve, to maintain this at 10% of the value of stock in the balance sheet, to add £25,000 to the employees' pension scheme reserve, and £25,000 to the general reserve, bringing this to £129,000. We then propose that the final dividend to the ordinary stockholders should be increased by the very modest amount of 2½% (to 12½%), which will leave an increased carry-forward of £207,190.

B.H.D. ENGINEERS

The third annual general meeting of B.H.D. Engineers, Ltd., was held on August 16 at the Grosvenor Hotel, Buckingham Palace Road, London, S.W., Mr. D. M. Henshaw, M.INST.GAS E. (the chairman), presiding. The following is from the statement by the chairman which had been circulated with the report.

Throughout the year the progress of the group has been maintained and the trading results again show an improvement. The rise in profits is not as steep as in the previous year, but in all the circumstances the increase can be considered a satisfactory one. The profit for the group is £278,200, as against £259,351 in the year to March 31, 1950. Taxation absorbs £156,082 of this profit, compared with £146,039 in the previous year. After allowance has been made for the interests of the outside shareholders in subsidiary companies, the net profits total £116,706, compared with £108,538.

The directors have carefully considered these results in the light of the capital requirements of the business and have decided to recommend a final dividend of 10%, thus making the full year's dividend 15%, as last year. This final dividend will absorb £29,781, leaving £86,925, as against £77,968, to be added to reserves and carry-forward.

THE GAS INDUSTRY AS A CAREER

The Youth Employment Centre at Port Talbot recently held a Careers Exhibition in conjunction with the Arts & Crafts Exhibition of the local Education Committee. The local undertaking of the Wales Gas Board received a last-minute invitation to co-operate and immediately arranged the setting shown in the above photograph. The lads are a pupil engineer and two apprentice gas fitters.

Exports of Coke and Patent Fuel

THE following table gives figures of exports of coke and manufactured fuels from the United Kingdom during July, the total for the first seven months of the year. and comparative figures for 1950.

Products	Month ended July 31		Seven months ended July 31	
	1950. Tons	1951. Tons	1950. Tons	1951. Tons
Gas coke	49,671	5,515	453,042	107,645
Hard coke	50,737	18,352	437,728	123,455
Breeze	41,030	58,026	257,616	289,238
Manufactured fuel	33,077	29,932	213,925	250,830
TOTAL	174,515	111,825	1,362,311	861,168

DURHAM COUNTY AGRICULTURAL SHOW

This photograph gives a view of the stand of the Northern Gas Board (Darlington Division) at the Durham County Agricultural Show held in Darlington on August 3 and 4. The exhibits included the Gas Council's coke displays for grass and grain drying, Stott No. 360 farm and dairy steriliser, Thornber Bros. gas heated poultry brooder (complete with chicks), greenhouse fitted with 'Daisy' heater, and the usual range of domestic appliances. The centre piece of the display comprised a working model gasworks with a wide range of by-products.

SIDELIGHTS ON SALES

We publish below a digest of current thought on the sales and service side of the industry, as reflected in the various activities and deliberations of the newly-formed Gas Salesmen's Circles

THE purpose of this review is to provide a guide to current thought on the service side, to indicate what subjects are being discussed at Salesmen's Circle meetings. Before dealing with recent papers, however, it is necessary for us to comment briefly upon some of the changes taking place in the Circle set-up. We would emphasise that this is not intended as a complete review of the Circle situation today, any more than the extracts from papers which follow are intended as a comprehensive digest. But it is hoped that by selecting certain items and presenting them in juxtaposition an overall picture may result.

The last six months or so have seen rapid progress in the plan to re-arrange Salesmen's Circles so as to conform to area, divisional, or district confines, and to co-ordinate their activities with board policy. In many cases senior sales officers have become chairmen of these groups, although some Circles plan to elect chairmen after the reconstituted groups have got well under way. The inaugural meetings were usually graced by the presence of the board chairman or a divisional manager, and in several cases their remarks are worth recording.

Hire *versus* H.P.

At Cambridge, for example, Mr. J. Hunter Rioch, Divisional General Manager, after explaining the reasons which prompted the formation of a Circle within the Cambridge division, had some interesting things to say about the sales picture. In comparing the merits of simple hire of appliances as opposed to hire purchase, Mr. Hunter Rioch concluded that the advantages of hire purchase both to the consumer and the Board were overwhelming. Simple hire failed because the fashions in cookers and other appliances were constantly changing; and because discontent was certain to be created amongst the hirers of older models when new ones were introduced. Speaking of competition, he remarked that the answer to those who contended that electricity, because of its 'modernity,' was receiving false support by Press and public alike, was to be found in action by the gas industry to secure a counterpart publicity. As years passed, new generations arose which had known both services throughout their lifetime, and any questions of 'modernity' could hardly be said to influence them.

The inaugural meeting of the North Eastern Gas Board Salesmen's Circle was addressed by Dr. R. S. Edwards, Chairman of the Board, who explained why the Circle was formed.

'We anticipate,' he said, 'that by the end of this financial year we shall have sold at least £1¼ million worth of appliances to the public, who will have consumed in these appliances between them rather more than £7 million worth of gas. Since gas can only be consumed when the sale of a gas-consuming appliance has first been effected to the public, it is imperative that we should seek to attain the highest possible efficiency; otherwise we fail in our duty of providing an efficient service to the public. This is no easy task with our 4,000 sq. miles and 80-90 direct selling points. You are the price ambassadors of the gas industry to the 800,000-odd consumers in our territory. If you fail in your task, then the sale of gas must inevitably suffer, which means we fail in our statutory duty as laid down in the Gas Act.'

Status of Salesmen

Later Dr. Edwards referred to the status of the salesman: 'There has been a feeling in the past that the salesman was a Cinderella of the gas industry, and that the part he played was not an important one. The Board do not take this attitude. This idea has now gone, and the Board are determined to give the salesman his proper position, and an opportunity to achieve promotional results. The saleman is the No. 1 contact of the industry with the public, and the pooling of ideas which can come about through the Salesmen's Circle operating in the group and for the board, as a whole, is one of the ways in which the gas industry is concerned, means home Board's area to the advantage of all.'

We have selected one further example. On June 19 the first meeting of the West Midlands Gas Sales and Service Association was addressed by Mr. G. le B. Diamond, Chairman of the Board, who explained at some length the present position of the Board and its future plans. The increase in gas sold for the year which finished in March, 1951, for the whole area was 8.2%, said Mr. Diamond. The sales of gas to industrial consumers represented 45.5% of the total sales of gas for the whole year. Because of the shortage of gas-making plant the Board had had to decline applications for additional gas to the extent of 8,000 million cu.ft. per year. That represented a manufacturing plant one and a half times the size of the Coventry gasworks. Last year the Board brought into use 20 mill. cu.ft. per day of plant, and had 100 mill. cu.ft. under construction at the present time.

Mr. Diamond described the objects of the Association and added: 'You are free, within certain limitations, to conduct the Association in a democratic way to the advantage of the Association and, I hope, yourselves.'

This pleasing reference to the allowance of a degree of freedom in conducting the affairs of a Circle (we use the term 'Circle' for convenience since sales discussion groups and sales and service associations have a fundamentally similar function) is somewhat unusual. Few of the reports which reach this office place any emphasis on free speech, etc., at Circle meetings. An exception was the statement made by Mr. W. J. Collins Garrard, General Manager of the Ipswich division of the Eastern Gas Board, at the inaugural meeting of the Ipswich Divisional Circle. A strong and healthy Circle, he said, was of vital importance to the proper development of an efficient sales organisation, and would provide members with a grand opportunity to expand their knowledge and discuss day-to-day problems in an *informal and unfettered atmosphere* (our italics).

And there we leave the introductory remarks made at inaugural meetings. Full reports of all new Circles and their officers are, of course, published in our sister journal, *Gas Service*. We turn now to papers presented at recent Circle meetings.

Ladies First: And that, as far as the gas industry is concerned, means home service. What better, then, to start the ball rolling, than some extracts from 'Selling to Women,' a recent paper to the Northern Gas Board Circle by Mrs. Eileen Murphy, Home Service Officer to the Gas Council. Mrs. Murphy commenced by emphasising the importance of the woman purchaser's point of view, and stated that, in addition to the incalculable amount of work done by women in their homes as wives and mothers, one paid worker in every three in civil employment in Great Britain was a woman (total 22,359,000, women 7,169,000, according to November, 1950, figures); one-third of these women, with pay packets of their own, were married.

Tact Tops the List

She continued with an examination of the qualities which the salesman must possess—cheerfulness, willingness to help, etc. High on the list was tact, of which Mrs. Murphy quoted some amusing examples. For example, it has been proved that salesmen can sell more pairs of shoes if, instead of saying, 'Madam, one of your feet is larger than the other,' he is trained to say, 'one of your feet is *smaller* than the other.'

'Sales psychologists,' said Mrs. Murphy, 'have divided the human race into three groups: The "motile" group, people who are most easily convinced when they are allowed to handle the product that is being sold; second, the "visile" group, people who are particularly susceptible to eye-appeal; and, third, the "audile" type, who are most sensitive to the spoken word. Few women belong to this last group. Most of them trust their eyes and their hands more than they trust their ears. They want to see a thing, to touch it, to see it in action before they will buy. This is where home service and gas demonstra-

tions fit into the sales scheme. Sales and service points of the whole range of domestic gas appliances can be demonstrated on the home service platform. The home service adviser sells by showing gas appliances in action instead of trying to describe them in words. Therefore, she has to plan her demonstrations to bring out effectively the sales points of the equipment and she has to promote the sale of *gas* by showing customers how to take advantage of the service given by the appliances you sell.'

The subject of demonstrations was also dealt with in Miss D. M. Card's paper, 'Home Service and its Relation to Sales,' presented to the Southern Divisional Circle of the South Western Gas Board. Miss Card, who is Senior Home Service Adviser of the North Devon sub-division, produced one of the best and most exhaustive studies of the work of the demonstrator we have encountered. So complete is its range that we shall not quote from this section in the present article (in any case the paper appears in full in the August issue of *Gas Service*). However, the following rather provocative extract is worthy of note.

Having described how she had had experience of all types of showroom and office work, and had spent some time accompanying a fitter on his rounds, Miss Card continued: 'Having thus "served my apprenticeship" to both salesmanship and gas fitting I feel reasonably competent, and am, indeed, expected, to cope within reason with any emergency which might arise, and believe me, the emergencies which occur in the life of a home service adviser are too numerous to relate. But how many salesmen or fitters have ever bothered to learn how to cook or to attend cookery demonstrations?'

She instanced a case in which a fitter had failed to correct, or even notice, a defect in a cooker which would at once be apparent to a person reasonably versed in gas cookery.

A Cooker's Selling Points

Miss Card also had some interesting ideas on the points a woman looks for and expects in a cooker. This, she suggested, was the order in which they occur to a woman when she is buying a cooker: 'Appearance (combining colour, design and prestige of ownership, etc.); (2) price; (3) ease of cleaning; (4) size; (5) performance. When the appliance has been fixed, however, this order is almost completely reversed. Her first concern is its performance, with the size and ease of cleaning following close behind. The price has either been paid, or she has got used to the quarterly payments or, most probably, it is now her husband's responsibility. As for the glamour of the new appliance, this rapidly wears thin if the performance, size and ease of cleaning do not come up to expectations.'

Returning for a moment to the subject of demonstrations, a paper to the Home Counties (Western Area) Circle—now known as the Southern (Northern Section) Circle—entitled 'The Value of Home Service in Relation to Sales' contained some figures concerning demonstrations at Oxford where the author, Miss Marguerite V. C. Narracott, is Senior Home Service Adviser. During the past three years the average attendance at the demonstrations was 70, the annual average total of demonstrations was 29, and the annual total attendance was 2,024.

Since 1947 a feature of home service work at Oxford has been the arranging of practical homecraft classes for brides-to-be and others. These, it appears, are planned in two courses, an Initial Course and an Advanced Course, each of 12 weeks' duration, covering cookery, home laundry, kitchen planning, care of kitchen equipment, simple dietetics and menu planning. During the year three courses are arranged, from January to April, April to July, and September to December, and between three and five practical courses are running concurrently during each session.

An idea of the popularity of the classes is shown by the figures quoted in Miss Narracott's paper: Since their inception in 1947, 753 students have been trained and 528 individual classes organised, and these are still continuing with equal success.

Potential Salesmen

So much for home service. Another paper given to the same Circle was by F. J. Mitchell, Manager of the Leighton Buzzard unit of the Aylesbury Undertaking. It appears that Mr. Mitchell had 'A Good Idea.' In point of fact, he had several. Here are some of his views on the fitter: 'He can do much to facilitate salesmanship by careful use of known facts regarding queries by consumers. It is really surprising how many consumers will readily confide in a fitter while he is engaged on their premises, probably due to their belief he will not obviously attempt to 'sell' them something. They will believe what he tells them and thus his position as a potential salesman is enhanced. Much harm can be done, however, by fitters giving inaccurate information and therefore both the warning of this and the facts must be supplied by his supervisors. It is wrong for a fitter to commit the undertaking on a promise of service, even if he is acting with good intent. All action required should be reported back to his supervisors, who are responsible for organisation of the work. To assist in giving the fitters information, a good library composed of current and topical information should be installed, as well as periodical refresher courses on the more usual types of apparatus in use on the district.'

Later he had something to say about other potential salesmen—the meter readers and collectors: 'They make regular visits to each consumer and are thus in a unique position whereby their visits are expected, and usually these employees become very well known in an area. The confidence placed in them by the consumer is very similar to that placed in gas fitters and hence they may hear of local complaints well before this information reaches the appropriate department by more normal channels. As this is the case, arrangements could be made to record lest the information and requests are lost or forgotten. Simple enquiry sheets carried by the meter readers for this purpose would then be passed to the department concerned and early attention given to the subject, including any sales leads which may subsequently evolve.'

Outside staff also received comment in a paper by H. Tomalin, Showrooms Supervisor to the Halifax District of the Huddersfield-Halifax Group. His paper to the Group's Circle had the title 'In Which We Serve' and dealt, as might be expected, with the importance of living up to the industry's tradition of service to the consumer. 'I cannot but feel,' he said, 'that since the war and the conditions brought about in the aftermath, more attention is being given to the profit side of our job than to the service and goodwill of the consumer, and that we are inclined to lose sight of the fact that we are not only selling gas and its appliances, but a service to the community in general.'

The author's views on the conduct of meter inspectors were almost identical with those of Mr. Mitchell: 'The meter inspector has to call at least four times in the year to either read or empty the consumer's meter. He has to take a careful and meticulous reading, and ensure that the performance of the meter is within the Board of Trade regulations regarding the supply of gas to a consumer's premises. He may also be set a predetermined number of meter readings per day by his undertaking. Inasmuch as we may readily appreciate such a policy, this predetermined number of calls should not be set too high to prevent him devoting a certain measure of his time to consumer service when the occasion arises. I feel that if a consumer has a complaint or some meter service requirements, and the inspector is allowed sufficient time to investigate and discuss the matter, he will be able to report back with all the details and not have to say 'You will have to go to the showrooms, this isn't my job,' or words to that effect. I do not propose that he should be able to deal there and then with the problem, but if the matter comes within his jurisdiction, at least the consumer will be saved a journey to the showrooms, and any probable delay will be minimised.'

Use of the Telephone

Another item worthy of reproduction concerned the use of the telephone.

'Much valuable service,' he said, 'can be rendered to consumers by all departments, by means of the telephone, as consumers are often impressed by an efficient and courteous reception afforded to them over the wire. A bad opinion of the department concerned is formed by a discourteous or abrupt reply, though it is quite easy to irritate a consumer through the tone of voice or maybe the phrase used at one end of the wire. The telephone has its many uses in consumer service, but much of its usefulness can be impaired unless we develop our technique in obtaining full benefit from its correct use. If it is used incorrectly it can be a weapon against us. The telephone was not intended or designed for unnecessarily lengthy conversations, but more for the receiving and sending of concise information, and in order for such information to be speedily received and acted upon.' And there is food for thought in that.

Considering the very few display artists in the industry it is surprising how many

papers are written on the subject of window displays and similar publicity. We are forced to the conclusion that the display artist is obliged to make out a case for himself, and for this he is blessed with apparently limitless energy. Just how good a case can be made for the use of attractive displays was illustrated by J. Bainbridge, Display Designer to the York-Harrogate Group in a recent paper to the Group's circle. Included in his paper was a list of the author's requirements for the perfect showroom window.

'My ideal window,' he said, 'is one which allows quick working, rapid adaptation, and straightforward handling. For a start, it must have, if possible, a door at the side, easy of access to the interior without having to disturb the display. The floor of the window should be at least 18 in. above the pavement. The dimensions should, of course, vary according to the type of merchandise, and must be governed by the sizes, weights, lengths, and grouping of the goods. The background and floor, if possible, should be so constructed as to be adaptable for a change of colour scheme and lighting effects. I would carry the background as high as possible to allow for a false ceiling, that could be raised or lowered according to the needs of any particular display. A sensible size for a gas showroom window would be in the region of 20 ft. long by 6 ft. deep by 10 ft. high. These measurements, of course, are only intended to serve as a guide, and could not be adopted unless the shop front was to be rebuilt. But existing windows can be adapted quite easily by means of screens or false walls.'

Not surprisingly, Mr. Bainbridge believed that the industry should have its own display men.

He asked: 'Are we going to leave the production of such display material to the specialists outside the industry, or build up our own display organisation within? It is my belief that the latter is the obvious answer. Given a qualified staff, adequate accommodation, and modern equipment, the scope of the display artist in the gas industry is immense. Let us hope that in the new scheme of things the place of the artist will be fully recognised, that his right to direct and control the displays will not be questioned, and that his budget will be such as to allow him to carry out his ideas to their fulfilment.'

Distribution is a subject adjacent to the sales field and closely related to it. The extent to which sales, working to a carefully prepared plan, can assist their colleagues on the distribution side is considerable, and it is therefore of the greatest interest to note the views of a distribution engineer when addressing sales personnel. Part of Mr. O. Pincock's excellent Chairman's Address to the South Western Gas Board's Southern Divisional Circle, dealt with the load factor. 'Originally,' said Mr. Pincock, who is Distribution Engineer to the Weston-super-Mare sub-division, 'this was the worry of the production engineer, later it was shared by the distribution engineer, but finally it is the salesman who can effect the greatest contribution towards the improvement of the load factor.'

He considered this in two stages: (1) The seasonal load factor, and (2) the daily load factor. Taking the former, the send-out during the minimum week from the Weston works was 60% of the send-out during the maximum week. Allowing for the fact that approximately 20% of the manufacturing plant was out of commission during the summer months for the resetting of retorts and general overhaul, this left approximately 20% of the manufacturing plant redundant for six months, and incurring annual charges. What could they do to even out this load, and ensure that not only their manufacturing sections, but also their distribution network was utilised to its fullest capacity?

Mr. Pincock answered his own question neatly enough as readers of the July issue of *Gas Service* will know, since this section of the address was published in full. After describing the three types of load met with in common practice—(1) the steady 24 hours per day, 365 days per year, load; (2) the high winter peak load which develops its maximum coincident with the maximum day's send-out; and (3) the load which is confined almost exclusively to summer use—he gave an example of each and explained its relative value to the undertaking.

Illustrating the first type he described a tunnel kiln used for the manufacture of flower pots and consuming six therms per hour, 140 hours per week; the second type was illustrated by a central heating installation with a maximum capacity of 4,500 cu.ft. per hour; and the third type was represented by a modern ice cream plant, a load which, in the author's view, should claim the attention of every salesman.

In the above selection we have indicated *some* of the topics under discussion among our salesmen and women. We think readers will agree that there is every indication of continuing enthusiasm on the part of sales staffs, and belief in their job as a service to the community.

Natural Gas Nerve Centre Controls New York's 275 Mill. Cu. Ft. Daily

SITUATED a half hour train ride from New York City, in Linden, N.J., is the nerve centre of Trans-continental's pipe line servicing the New York, New Jersey areas. It was here in January, 1951, that a small group of men in a modern dwelling-type building started controlling the flow of large volumes of natural gas from Texas fields into the heavily populated, industrial areas of New York and vicinity.

It is here that 24 hours a day, year round, a constant and careful check is maintained to control and maintain gas flow, pressures and quantities in the proper relation to demands of the consumers. Vital decisions are constantly being made to ensure service to the millions of users who take for granted that gas will be available when, where, and in the quantities they might wish to use.

At the nerve centre careful study is given to the anticipation of peak demands and dispatching the proper quantities of gas at the right pressures to the delivery points to assure continuous gas service. From this point the controller has two-way contact with the upstream compressor stations and the control station at Houston by way of a 12-channel microwave high frequency radio network. By these means it is possible for the controller to ask for more gas and pressure in order to pack the line prior to the sudden drain of a peak hour demand and also to maintain adequate gas flow and pressure during the times it is needed to meet demand requirements.

The Linden control station has other functions, besides those of controlling the flow of gas, as headquarters for eastern terminus gas measurement, pipe line maintenance, corrosion control and communications centre with its network of direct leased telephone lines, two-way short wave radio, and an elaborate microwave radio system. It is evident that Linden is equipped to handle and direct the operations necessary to cope with any pipe line emergency.

Incidental to the operations at Linden, a laboratory is maintained where a running check is kept on B.Th.U. content, gravity, and humidity with an occasional check on the super-compressibility of the gas flowing to the markets. It is necessary to maintain a constant exchange of operating demands and conditions between all stations all the way along the 1840 mile long pipe line.

At the present time the control station at Linden is dispatching between 250 mill. and 275 mill. cu.ft. daily. In the future when the complete facilities are available, it is expected that quantities approaching 500 mill. cu.ft. daily will be passing through Linden. The gas on arrival at Linden is at average main line pressure but is regulated to the required pressure on the outlet side in order to maintain proper flowing conditions to the markets.

The control station is situated on a tract of land of some 17 acres, located next to the new New Jersey turnpike, presently under construction. The station itself is in the final stages of completion; all that remains is landscaping and general clean up of the area. A modern air-conditioned ranch-type brick building houses the control centre and offices; there is a corrugated work, supply and store house, and a separate six-car and two-truck garage. Reaching high into the sky is the criss-crossed spiderlegged steel radio tower on top of which is located the direction microwave reflector antenna. Out in the open, above ground, are the regulators, four gas scrubbers and the four orifice meter runs with their accompanying valves and fittings.

(The foregoing description is extracted from an article appearing in a recent issue of the American *Gas Age*.)

WILTON'S NEW COUNTRY OFFICES

The expanding business of the Chemical Engineering and Wilton's Patent Furnace Co., Ltd., recently compelled the firm to seek larger offices, which have now been found on a site of about eleven acres at Holbrook Park, within easy reach of Horsham, and are equipped on the most modern lines.

ON the ground floor are five drawing offices, the director's office, and two canteens. One of the canteens is used for the entertainment of visitors and for staff meetings; in the other a main meal is served to the whole staff at mid-day, and tea is also served during a short tea break taken by the staff in batches. On the first floor are offices containing the accounts department, the projects department, the purchasing, estimating and costing sections, the engineering and design staff, and the secretary's office. The second floor is used for living accommodation, and emergency business can thus be dealt with after normal working hours.

The grounds provide amenities which include good fishing and two hard tennis courts. Plans are being made for a putting green and for indoor games during the winter.

In these agreeable surroundings the firm is dealing with the many branches of chemical engineering which have been developed since its establishment just over half-a-century ago to manufacture by-product and washing plant for gasworks and coke ovens. Current work includes continuous tar distillation plant for the United Coke and Chemicals Co., Ltd., the Normanby Park Tar Supply Co., Ltd., and the South Eastern Gas Board (for Ordnance Wharf, Greenwich). Tar distillation plants for export are being installed for the Dundee Coal Company and the City of Johannesburg Gas Department in South Africa and for the Auckland Gas Company in New Zealand. A new sulphate of ammonia plant is being installed for the South Eastern Gas Board, the plant comprising two units each capable of producing by a fully continuous method over two tons per hour of the highest grade of sulphate of ammonia. A number of ammonia liquor concentrating plants are in hand for other gas boards, and export orders include plants in South Africa, Australia, and France. Other work in hand includes two installations for tar acid recovery and a plant for solvent recovery in the plastics industry.

Mr. Norman Wilton in his panelled office at Holbrook Park

One of the spacious drawing offices.

The Wilton forced draught furnaces, which are designed specially for the use of coke breeze and slurry and are manufactured entirely at the firm's Hendon works, have recently been fitted with electric fan forced draught, achieving large economies in steam and silence in use compared with the original steam jet type.

The Chemical Engineering & Wilton's Patent Furnace Co., Ltd., have lately become members of the Simon Engineering Group, although retaining their separate identity. Their chairman is Mr. R. B. Potter, who is also chairman of Simon-Carves, Ltd., with whom their work is closely associated.

Gas Industry in France

Our Own Correspondent extracts from the French Technical Press a selection of current developments in the gas industry across the Channel.

THE 39 papers presented and discussed at the 68th Gas Congress, which took place at La Baule, a holiday resort on the west coast of France, near Nantes, from June 19 to 23, are briefly summarized in the *Journal des Usines à Gaz* of July. The highest authorities of *Gaz de France* honoured the Congress with their attendance and the presence was noted of M. Le Guellec, President of the Council of Administration, of several Administrators, of M. Combet, Director-General, of M. Leclers, Director *de l'Exploitation*, of M. Mougin, Director of Equipment, of Professor Ribaud, Director of Research, of M. Certeux, Director of Finance. Electricity was represented by its Director-General, M. Gaspard, the coal industry of France by M. Thibault, and Electricity and Gas of Algiers by M. Lecutier.

At the opening meeting of the *Association Technique de l'Industrie du Gaz en France*, its President, M. Biard, welcomed a large number of foreign visitors among whom were M. Brabant, President of the International Gas Union and Mr. J. H. Dyde, President of the (British) Institution of Gas Engineers. Continuing a tradition inaugurated two years ago, the President of the Council of Administration, M. Le Guellec, addressed the Congress on the difficulties and the hopes of *Gaz de France*. On the commercial side he said that negotiations between the gas industry and the Communes on the basis of the new *Cahiers des Charges* (a standard form of contract) were going well. If from the financial point of view the situation is on the whole more favourable this year than last, it is still not yet entirely healthy and he exhorted his hearers to pursue on all fronts a policy of strict economy, reducing costs to the lowest possible and developing sales to the maximum but always at tariffs which are remunerative. The success of such a policy is tied up with the plan of equipment of the industry the realisation of which might be regarded as satisfactory considering the very modest allocation of capital to the industry.

M. Biard Hands Over

M. Biard had come to the end of his term of office, limited by custom to two years. He introduced his successor, M. Jean Kec, Chief of the West-Central Division. And he addressed the assembly on the subject to which he had devoted an important part of his career, that of research and other laboratory work, describing particularly those demonstrations and premises he had visited and inspected during his recent visit to the United States of America.

We can do no more than mention, with a pause here and there to note what is of particular interest to English readers, some of the subjects dealt with in the proceedings of the congress. We can well understand that it required all the 'authority of the President and the discipline imposed upon themselves by authors and those who took part in the discussions for the planned time table to be *exactly respected*.

M. R. Wildenstein described a method for the direct determination of oxygen in coal, a point in the control of coals in modern coke oven practice. It was considered that with the two figures, oxygen content and volatile content, a coal could be satisfactorily classified. To obtain the optimum results from given coals it was necessary to measure their coking properties, their petrographical analysis, and their proximate and elementary analysis. M. Guy Antoine described the modernisation of a little gasworks (serving 1,200 consumers with 420,000 cu.m.—say, 15 mill. cu.ft.—in 1949). Machine-charged horizontals are fired by two independent producers (of the Pierson type) fed with small coke. M. P. Bolzinger described the carburation of water gas with heavy oil at Roche-Maurice (Nantes). Normally water gas is enriched to 3,700 cal. per cu.m.—say 390 B.Th.U. per cu.ft.—by injection into the generator, and to 4,500—say 470 B.Th.U.—by injecting both into the generator and the carburettor; for one day it was pushed to 5,000—say 525 B.Th.U.

Messrs. Hurel and Giampaoli, of the Chemical Research Department, contributed a study of 'autothermique' cracking of commercial propane. They obtained a gas with hydrogen content about 20% and density 0.85, which should give satisfactory results in domestic burners, with simple apparatus and a robust catalyst. Tests gave reason to hope that the process could be extended to gas oil if propane should not be available. MM. R. Maurel and A. Defour, of the S.W. Division, described an installation cracking natural gas at the Pau gasworks. The natural gas is 'reformed' by steam in the presence of a catalyst. The gas distributed, containing about 35% hydrogen and with a C.V. of about 440 B.Th.U. per cu.ft., is a mixture of cracked gas, waste gases from the heating system, and natural gas. M. J. Lacroix discussed crystalline hydrates which may be formed in natural gas in the presence of water and under certain conditions of temperature and pressure. These hydrates may be deposited in mains and services with consequent obstruction. Their formation may be prevented by dehydration of the gas, by heating it, or by injection of antigels, methanol in particular.

Recovery of Fire Damp

The first attempt at the recovery of fire-damp in the Northern coalfield, the Pas de Calais, carried out in the Groupe de Liévin, was described by their engineer, M. E. Lesaine. The gas is extracted by a Roots exhauster at the surface from old workings through a 200 mm. main. In practice it consists of a mixture of methane and air. The methane content has varied throughout 1950 between 87% and 35%, being for most of the time between 40% and 60%. It is hoped to extend and improve the collecting system and that eventually a much larger quantity of richer gas will be obtained. The transport and use of fire-damp recovered from coal mines in Belgium was described by M. P. Dorzée, Director-General, and M. R. de Brouwer, Technical Director of Distrigaz. The details are similar to those given by M. Brabant to our Institution in June, Comm. No. 383.

The coking of Lorraine coals was the subject of two papers. One by MM. Langlois and Pamart described a test at the experimental station of Marienau in a blast furnace of a 'lot' of 12,000 tonnes of coke made in coke ovens at Thionville on the Marienau process from a mixture of Sarre and Lorraine coals and semi-coke charged dry and pulverised. The other was a study by MM. C. Jully and A. Thomas of the structure of cokes made from Lorraine coals.

The repair of carbonising chamber walls by the use of pulverised cement in the well-known spray welding apparatus was described by M. B. Coussy, Engineer to the Paris group. The process has been applied to continuous verticals and coke ovens at Gennevilliers and the author is of the opinion that it is successful in all cases at least for silica refractories. It should, he thinks, supersede all other methods so far proposed with the exception of 'Airborne sealing' which may prevent in some measure the formation of new fissures. M. Clapier, in the discussion, suggested that the two processes should be used together to prolong the life of retorts.

The new Gilly intermittent vertical retort setting of the Cie. Générale de Construction de Fours was described by M. J. Labat, of Limoges. It is characterised by a new method of recuperation in which an external water gas generator takes the place of the usual built-in producer. The recuperator is simplified and of metallic construction. The water gas may be used as additional gas and may serve as peak load gas.

M. J. Allain discussed new elements in the study of the detarring by shock and M. J. Pinaut made a contribution to the study of chemical purification. Modifications of the purification process at Clermont-Ferrand were described. The mixture in convenient proportions of purifying materials based on

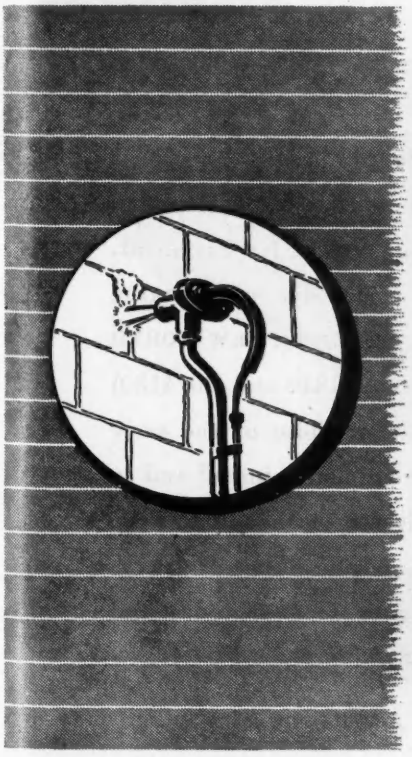
PROLONG THE LIFE OF YOUR GAS MAKING PLANT BY

Spray Welding

Developed from the pioneer work of the Birmingham Gas Department the Spray Welding Process enables the walls of gas making plants to be repaired whilst they are *hot*.

Briefly — a dry powdered refractory material is applied in a fused state by means of an oxy-coal-gas flame to the defective area and there welded to the refractory structure.

Both the extent and the location of the weld are controlled by the operator. Holes can be filled, joints closed and eroded areas built up.



THE WOODALL-DUCKHAM VERTICAL RETORT & OVEN CONSTRUCTION CO. (1920) LTD.

WOODALL-DUCKHAM HOUSE, 63-77 BROMPTON ROAD, LONDON, S.W.3

Members of the Society of British Gas Industries

TELEPHONE: KENsington 6355 (7 lines) TELEGRAMS: RETORTICAL, SOUTHKENS, LONDON

Cooking is a

Cooking is a creative art which enlists the aid of the creative engineer. Good cooking demands not only good cooks but also the best cookers. Since 1923 some of the best domestic cooking in this country has been done by more than two million housewives who can claim: "*It's a* NEW WORLD *for me!*"

Such discriminating women have been helped by the creative engineers and scientists of Radiation, whose cardinal policy today, as in 1923, is summarised in the words Research . . . Development . . . Improvement.

It is a progressive, not a static, policy. Thus the current NEW WORLD Gas Cookers (the 1840 and the 4180) are far ahead of those of the early years, being simpler to install and to service, easier to clean and to keep clean, more sparing in use of gas . . . So, for the good cooks of today and tomorrow, as for those of yesterday—

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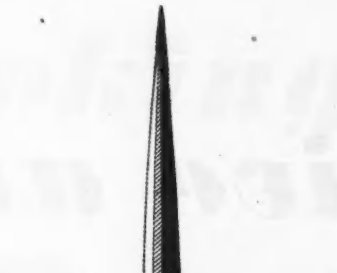
...it's a NEW WORLD PRODUCT OF Radiation Ltd for me!

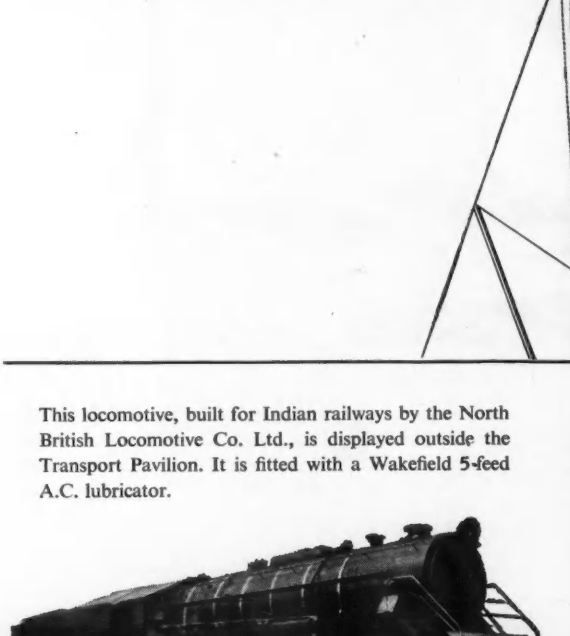
NEW WORLD NEW WORLD NEW WORLD

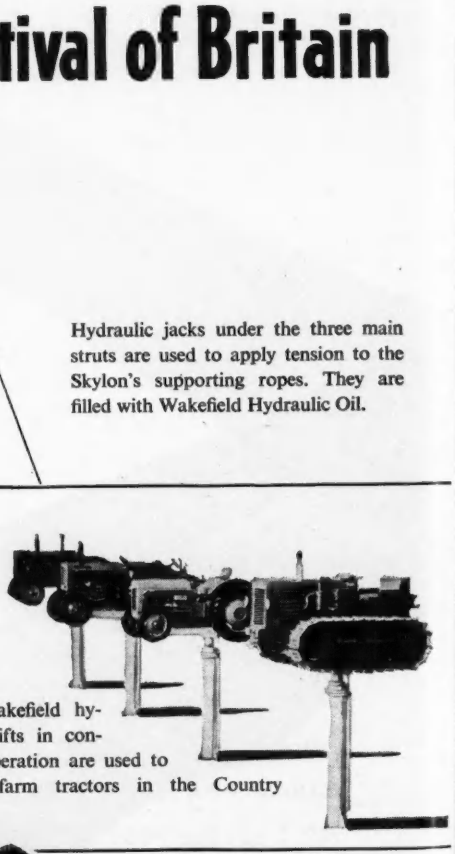
WAKEFIELD at the Festival of Britain



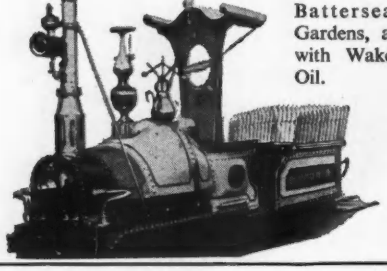
Hydraulic jacks under the three main struts are used to apply tension to the Skylon's supporting ropes. They are filled with Wakefield Hydraulic Oil.

This locomotive, built for Indian railways by the North British Locomotive Co. Ltd., is displayed outside the Transport Pavilion. It is fitted with a Wakefield 5-feed A.C. lubricator.

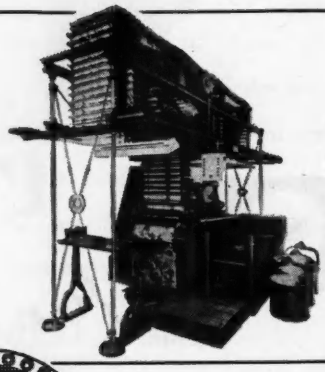




Four Wakefield hydraulic lifts in continual operation are used to display farm tractors in the Country Pavilion.



The locomotives on the Emett railway, at the Battersea Pleasure Gardens, are lubricated with Wakefield Deusol Oil.



A carpet loom, manufactured by Platt Bros. & Co. Ltd., on display in the Power and Production Pavilion. It is lubricated throughout with Wakefield Lubricants.

C. C. WAKEFIELD & CO. LTD

INDUSTRIAL WAKEFIELD LUBRICANTS

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oxides of manganese with those based on oxides of iron, favouring the maintenance of a correct hygrometric condition in the boxes, facilitates the recovery of fixed salts of ammonium from pre-existing impurities. These salts, all soluble, are eliminated by periodical washing and the metallic oxides are regenerated *in situ* by an energetic blowing with air, the humidity of the purifying mass passing from 40% to 25% following the exothermic reactions of purification. The washing water is practically inodorous and is passed direct to the sewers. Important economies are realised; the reduction in selling value of old material by reason of the loss of Prussian blue and ammoniacal salts is largely compensated for by the advantages of the system, in particular by the increase in the life of the materials.

Distribution Problems

Several papers dealt with problems in the calculation of distribution systems, the use of long feeder mains as storage, daily variations in gas demand in Paris, compensation joints in long feeder mains, the tightness of valves in high pressure systems, the 'telemeasure' of pressures, cathodic protection of pipelines, etc. M. J. Ruault proposed a graphic method of approximate determination of data for projected installations of central heating, while M. Jerphanion described the results of the installation of heating by air under pressure (air pulse) in the experiment at Calais, which is considered to be entirely successful. M. Laurent Guy analysed the curve of daily consumption related to domestic cooking. M. H. Marchasson discussed the automatic clothes washer as a new and important outlet for gas. M. A. Narbonne discussed experiments in the charging of cylinders with compressed natural gas and M. J. Verrien the compressibility of natural gas.

M. Delbourg discussed again his test burner for the control of the quality and interchangeability of gases. M. Charles Thibaut made a contribution to the study of the density of cokes and M. H. Perdou discussed the use of small coke in central heating. The evolution of specifications of road tars in France since 1939 was discussed by M. J. Franck. Professor Henry Gault dealt with the application of some physical techniques to the study of pitches and M. A. Lecœuvre described the treatment of pitch at the tar works of the Cornillon. M. Geoffrey of the Tar Section of the Research Department wrote on the utilisation in agriculture of tar oils and particularly anthracene oils. The valuable insecticidal and anti-mould properties of anthracene oil were briefly described. In addition these oils have a phyto-hormonal action, recently discovered, which results in a luxuriance of vegetation and increased production. A soluble oil prepared specially by *Gaz de France* has given excellent results. Finally, MM. Croisier, Hoestland, and Menessier of the Research Laboratories of the Pas de Calais coalfield, reviewed the principal methods of determining the thiophene content of benzene and thiotoluenes in toluene.

The Works at Nantes

Among the visits arranged was that to the Roche-Maurice gasworks (Nantes). This works was completed in 1934. Output has risen from about 730 mill. cu.ft. in 1936 to 1,270 mill. cu.ft. in 1950. The carbonising plant consists of Picard intermittent vertical chambers, each treating 3.5 tonnes of coal per 12 hours, including two hours steaming, of a total capacity of about 5,800,000 cu.ft. per 24 hours. The chambers are heated by five outside mechanical producers, three older ones gasifying 22 tonnes per day and two more recently installed 25 tonnes. The producer gas is washed and de-dusted in scrubbers. The settings can also be heated by rich gas or by a mixture of rich gas and producer gas, giving flexibility in gas and coke output. Water gas is in two lines of Humphreys and Glasgow plant, each line capable of producing 1¼ mill. cu.ft. per day carburetted to 470 B.Th.U. and both equipped to crack gas oil, paraffin distillate, or heavy oil. Ancillary plant includes two primary condensers, three centrifugal exhausters, two secondary condensers, one Livesey washer, two Multifilm washers and one line of dry purifiers which will soon be replaced by tower purifiers now under construction.

Coal stocks are slightly better than when last reported. The gas industry at July 1 had 410,000 tonnes in stock (say 30 days supply). For the third quarter 1,475,000 tonnes is allocated to the industry, which if it is realised will bring stocks at October 1 to 600,000 tonnes, which should permit the winter to be faced with equanimity. The total requirement of 18,350,000 tonnes for the third quarter is expected to be made up of 13,800,000 tonnes French and Sarre coals and 4,500,000 tonnes imported, half from European countries and half from the U.S.A. The shortage of metallurgical coke has led the authorities to limit allocation to the steel industry to 90% of its technical capacity and commercial possibility and to establish a plan of allocation among producers, including *Gaz de France*. Industry and domestic consumers will be provided in the months to come only from daily production. The stock of coke at the collieries is practically *nil* and that of the gas industry is at its technical minimum—80,000 tonnes.

BOOK REVIEW

ADVANCES IN ACETYLENE INDUSTRY AND CHEMISTRY*

THE shortage of petroleum products and other raw material in Germany during the war years led to extensive investigations being made into the possibility of using acetylene as a starting point for the German synthetic chemical industry. The present publication reviews the industrial production of acetylene and the present knowledge of the chemistry of acetylene, to the practical and experimental possibilities of which German investigation during the war contributed a considerable amount of new information.

Although certain methods of acetylene production, those in which carbide or the electric arc are used, require large quantities of cheap electric power, there are promising processes which involve the thermal cracking of methane and other saturated hydrocarbons, and these are likely to repay further investigation and development.

Important work was carried out in Germany on the manipulation of acetylene under pressure. This work was not limited to the laboratory; in fact, butinediol was produced at the rate of 21,500 tons a year by this method. Coupled with parallel research carried out in Britain, U.S.A., and France, the German war-time advances in acetylene production and chemistry are likely to lead to an increased industrial use of the varied intermediates which have been discovered in recent years.

* 'The Acetylene Industry and Acetylene Chemistry in Germany during the period 1939-1945' by R. Owens, Ph.D., and A. W. Johnson, Ph.D., A.R.C.S.; Published by H.M.S.O. for D.S.I.R. Price 3s. 6d. (America 90 cents). By post 3s. 9d.

NATIONAL INSURANCE REMINDER

EMPLOYERS are reminded that the increased rate of contributions laid down in the National Insurance Act, 1946, comes into operation on October 1. Stamps at the new rates will be available at Post Offices as from September 24.

The amount of the increase in the employed persons' (Class 1) rate is 4d. in the case of men and women over 18, and 2d. in the case of boys and girls under that age; the increase is divided equally between the employer's and the employee's share. There are corresponding increases in the Class 2 and Class 3 rates. Leaflet N.1.63, which sets out the main rates, can now be obtained at National Insurance offices and will also be available at Post Offices from September 1.

AMERICAN TRIBUTE

THE productivity team from the American pressed metal industry, the second 'reciprocal' team to visit industries in this country under the auspices of the Economic Co-operation Administration, sailed for the United States on July 28 after a five weeks' tour of British factories. At a London Press conference, the visitors said that they had been impressed by the speed and efficiency of British manufacture in the 13 pressing plants which they had visited. They were surprised by the newness of the factory buildings and the excellence of the machinery, which they had expected to be of 1930, 'in not a particularly good shape' after severe usage in the war. One of the visitors said that they had all envied the modern layout of our factory buildings in which the standard of cleanliness was high and the lighting excellent. British workmen, they had discovered, worked much harder than their American counterparts. They also found that the relations between management and the workers were more cordial than in the United States.

Technical Advances During

100 YEARS IN THE GAS INDUSTRY

By

F. M. BIRKS, C.B.E., M.I.Mech.E.

Deputy Chairman,
North Thames Gas Board.

In a paper to the Joint Engineering Conference, 1951, arranged by the Institutions of Civil, Mechanical, and Electrical Engineers, Mr. Birks, Deputy Chairman of the North Thames Gas Board, shortly after completing his year of office as President of the Institution of Gas Engineers, reviewed the development of gas making, storage, and distribution plant during the past 100 years and showed that thermal losses in carbonisation had been halved during that period. From the economic aspect he concluded that the gas industry has a promising future. We give only brief extracts from the paper.

THE gas industry's development was in the forefront of the industrial revolution, preceding the steam locomotive and many of the engineering tools and machines which subsequently simplified so many production and manufacturing problems. It was therefore a great achievement that such rapid development of the industry was possible, for by 1851 it had become prosperous and well-established in many countries both in the old world and the new, and furthermore, it had for that period attained a creditable standard of technical efficiency.

The world's first gasworks, of which relics may still be seen in Westminster, was unique throughout its entire history, in that it was used for the manufacture of two types of gas:

(1) Gas of maximum candle-power obtained from cannel coal and used to supply the Houses of Parliament, the Royal Palaces, and the purlieu of Westminster.

(2) Gas of normal candle-power made from Newcastle coal which, together with similar supplies from two other works, was used to feed the remainder of the district served by the Chartered Company at that time.

Carbonising Plant

Until 1851, stop-ended cast-iron retorts were employed almost exclusively. Fireclay retorts were introduced in 1820, but did not come into general use in England until 1850, although at that time they were much used in Scotland.

During the period 1870-90, direct firing of retort settings was superseded by producer-gas firing with or without the addition of recuperators for preheating the secondary air by heat exchange from the waste gases.

During 1890-1920 there were large installations of inclined retorts in operation which gave excellent results. The period 1900-1910 saw the successful development of the Glover-West and the Woodall-Duckham systems of continuous vertical retorts.

The type of plant utilising intermittent vertical retorts, which was designed on the Continent, was introduced into Great Britain in about 1920. In the largest of gasworks, coke ovens have been adopted because of their low labour and fuel requirements and their long life.

Water Gas

At about the middle of the nineteenth century a great deal of interest was displayed in the manufacture of water gas. The difficulty of supplying a suitable enricher, however, limited the use of blue water-gas and it was not until about 1880 that, particularly in the United States, interest in water gas was revived. The ready availability of crude petroleum oils there led to rapid development of carburetted water-gas. Carburetted water-gas plant was installed at Beckton in 1891, since when the use of this type of plant has steadily increased. Until 1920, water-gas generators were hand clinkered and hand operated but from that date all large plants had self-clinkered generators and mechanically operated valves. At the same period waste-heat boilers for generating steam from the hot blow-gases were added to water-gas sets.

Efforts are being made to provide plant, even cheaper and more automatic than carburetted water-gas machines, for extreme peak loads. These plants rely entirely upon oil. In one such process preheated gas oil is burnt with a limited supply of preheated air to form a stable gas having a calorific value suitable for direct admixture to the district supply. An even more recent process has been developed in which heavy residual oils can be gasified by means of catalytic cracking, producing permanent gases with similar characteristics to coal gas and having a calorific value suitable for direct supply to the district.

Gas Exhausters and Pumping

By 1851 the advantages of providing mechanical means for assisting and regulating the flow of gas from the retorts to the gasholder were generally appreciated. The earliest mention of exhausters was in the patent obtained by Broadmeadow in 1824 which appeared to describe a machine comprising two sets of bellows, generally similar to the air blowing engine of that time. A year later, however, another patent was granted to the same inventor for an improved machine comprising two or three gas bells which were alternately raised and lowered in a tank of water by means of a system of beams and cranks.

These machines were short lived and in about 1847 the Roots type of machine then known as the 'two eights' was introduced to a London gasworks. This machine, however, although appearing of sound design, was soon to be superseded by other types.

In 1840, Beale invented his rotary steam engine of the crescent chamber type, which caused great interest to the mechanical engineers of the period. Several patents were filed for other types of exhauster, including machines resembling power-driven wet meters, steam jet blowers, and various reciprocating types, but little was heard of them in the industry itself.

In the early years of the twentieth century, simple rotary machines of the centrifugal- or axial-flow types, powered by steam turbines, proved their superiority for those applications where large volumes and relatively small pressure differentials were involved.

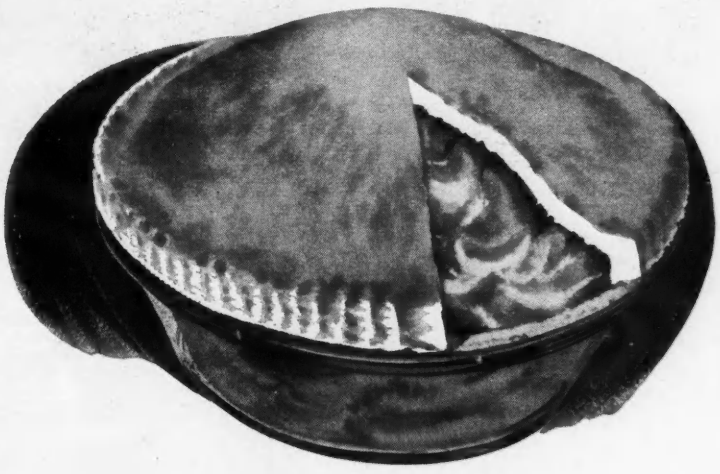
Tar and Ammonia Recovery

In the early days of the industry the disposal of tar presented a problem and it was largely burnt as fuel for heating the retorts. During about 1830-40, creosote began to find a ready sale for preserving railway sleepers. The use of pitch for coal briquetting commenced in 1842 and later absorbed all the pitch available. Although patents for using tar as a road surfacing material appeared as early as 1840 it was not until the advent of the motor car at the end of the century that this use for dehydrated tar became extensive.

Ammoniacal liquor had no great commercial value until the introduction of the ammonia-soda process in 1875 created a demand for ammonia. The production of ammonium sulphate as an agricultural fertiliser became important from about 1895. This had the advantage that it also provided an outlet for the sulphur in spent oxide.

PROOF OF THE PUDDING—OR APPLE PIE

—they say, is in the eating. Good cooking means more than a clever cook, it needs a good cooker as well. Parkinson Gas Cookers have recently proved once again their superlative performance by cooking the best of apple pies.



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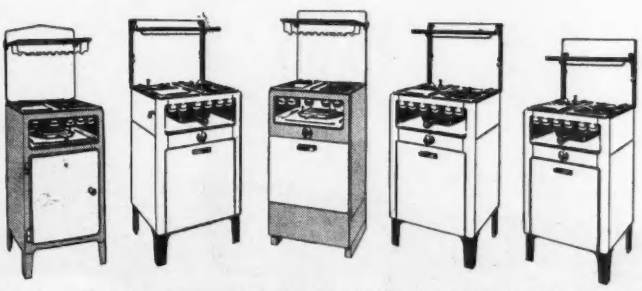

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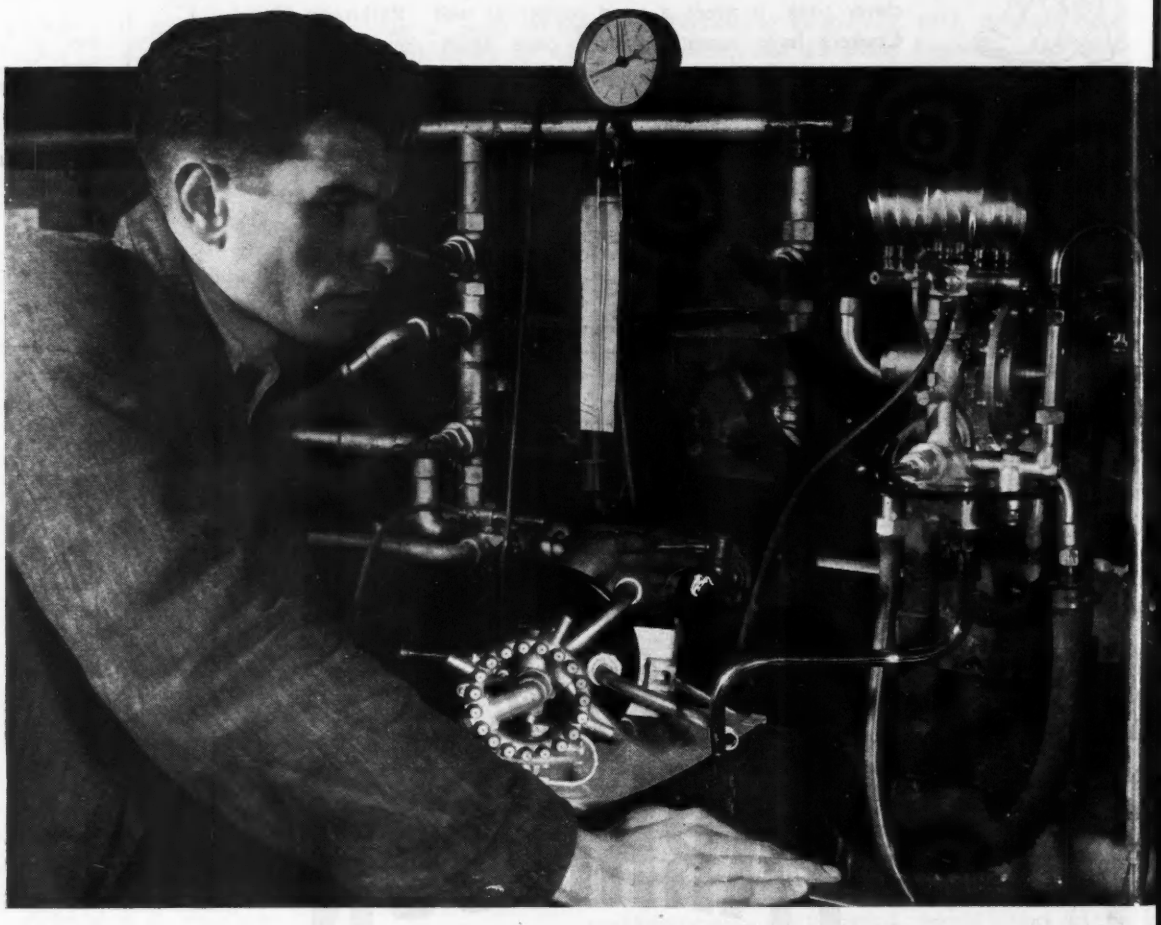

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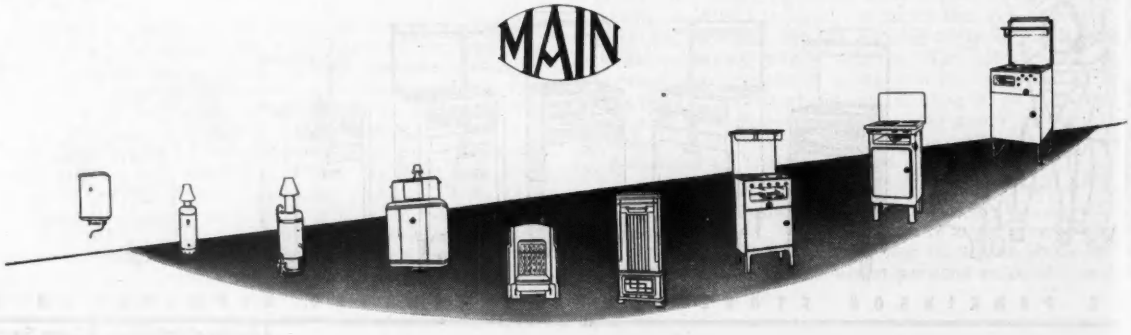

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In 1850 all the coal, coke, and other materials used on the works were handled by manual labour with some assistance from horse-drawn carts. Most of the coal was transported to London by sea and vessels were discharged at a wharf on the Thames near Horseferry Road. The coal was transferred into carts which conveyed it to the works. Stocking facilities were practically non-existent and what limited coal reserves there were had all to be manhandled, incurring high labour costs and much inconvenience. At that time there were no mechanical means of handling the coal into the retorts or of removing the incandescent coke, prior to quenching.

There is little doubt that the credit for appreciating the significance of securing low transport and handling costs of coal from colliery to the retort house goes to John Orwell Phillips, Secretary of the Chartered Gas Company. This statesmanlike man foresaw that the lower freight charges on water-borne coal were an essential prerequisite to the production of cheap gas. He himself was not an engineer, although he had the advantage of a legal training which, combined with the sound technical experience of F. G. Evans, the Engineer to the Chartered Company, enabled Simon Adams Beck, then the Governor of the Company, to put forward a bold and ambitious plan for constructing large works on the River Thames for supplying all the gas required in north and south London at that time.

Steam and Power

Up to the mid-nineteenth century little stationary steam raising plant was in use in gasworks as there was practically no mechanisation. Shell-type boilers, however, were introduced about 100 years ago as the necessary source of energy for driving the gas exhausters and subsequently steam power became the general medium for driving prime movers associated with the numerous mechanised processes. The efficiency of these plants was generally low and the overall fuel consumption gradually rose with the introduction of more machinery until, in the early twentieth century, it represented more than 20% of the coke produced. Subsequently the advent of the waste-heat boiler in conjunction with the carbonising and water-gas processes led to substantial economies and although the demand for steam continued to rise, more than half the total requirements were recovered from waste heat.

It is possible that when the industry started in 1812 the conception of distribution was based on the assumption of an even pressure from end to end of the main substantially equal to that of the holder pressure at the works. This necessitated a velocity of gas in the main so low that frictional loss was virtually reduced to a negligible quantity. Owing to the rapid growth of the consumption it is probable that this phase lasted only for a short period, and that it was quickly realised that it was impossible to keep a constant pressure in the mains irrespective of the gas consumption. The tendency then was to use the largest size of main that was economically possible and later to feed these mains from some common centre by means of trunk supplies and governors to regulate the pressures to within prescribed limits.

A modern system for a large area now consists of a network of interconnected mains which should theoretically follow the pattern of a spider's web with radial tentacles stretching out from the point of production and feeding this system at as many points as necessary to keep the pressure losses in the web to a practical minimum.

The gas industry differs from any other public utility as it has to market several different but interdependent fuels and chemical materials and the manufacturing cost of its main product, gas, is markedly influenced by the revenue received from the other residuals of the carbonisation process. A rather delicate balance therefore exists in relating markets and prices to secure commercial stability, and the gross revenue account in the gas industry is more dependent upon the fluctuations of national and, indeed, international price levels, than any of its sister services.

In order to be in a position to take advantage of fluctuating markets, it is important for the industry to procure a maximum degree of flexibility in adjusting the relative proportions of its products. Much attention is being given to these considerations at present and the degree to which they can be co-ordinated with economic requirements, and general improvements in efficiency will influence the future of the industry. These comments represent personal opinions and not necessarily those of the industry as a whole, or indeed any particular section of it.

Appreciation of the need for flexibility is being shown by the growing tendency to install plant, not only capable of producing gas in sufficient quantities to meet the day-to-day consumptions but also having available a means of regulating the gross yields of the various residuals.

For many years it has been possible to effect some control on the net coke yield by using water gas in place of carbonising plant and, alternatively, by using surplus gas for firing the carbonising plant when it is required to increase the proportion of coke for marketing. Such means enable a fairly wide measure of control over the coke market to be effected by varying the degree to which complete gasification is achieved, but with present methods the further this is pursued the greater is the quantity of non-indigenous raw materials in the form of mineral oil required to maintain the calorific value of the gas at the high level necessary to ensure economic distribution. To overcome this difficulty, therefore, extensive research is being carried out on other methods of obtaining the complete gasification of coal in one process which will give a compact plant of higher overall efficiency. Various methods are being examined, but the most promising processes entail the use of large volumes of oxygen which have hitherto been expensive to produce and have not justified the installation of plant on a commercial basis. Substantial progress, however, is being made towards reducing the cost of oxygen production.

Other means of controlling the proportions of marketable residuals from the gas-making process is found in some of the modern boiler installations which can use solid fuel in the form of coke breeze, or, alternatively, pitch or other tar products.

Calorific Value

A significant proportion of the capital invested in the gas industry is tied up in the distribution system, and to make the best use of such assets it is customary to distribute gas of the highest calorific value practicable. Consequently, during the twentieth century there has been a tendency to raise the calorific value of gas supplied in Great Britain, but in spite of this it is still not generally found economical to transmit gas over distances of more than about 50 miles. In the United States, however, the high calorific value and low initial cost of natural gas justifies distribution at high pressures over considerable distances.

With the continuously increasing demand for gas it is probable that in the future further research will be directed to gasification methods which will yield still higher calorific value so that the thermal capacity of existing distributing networks may be extended.

Research is also being directed to the ancillary processes associated with gas manufacture to permit the use of more compact plant which will incur lower capital costs. At the same time the efficiency of such plant is being continuously improved and the degree of mechanisation is being developed to the economic limit. This applies particularly to the plant for hydrogen sulphide removal and it is anticipated that in the future, apparatus for the removal of other organic sulphur compounds will be generally introduced, thereby producing gas of the utmost purity and bringing the advantages of reduced corrosion from products of combustion and the elimination of objectionable odours.

The search for improved thermal efficiency in all the processes on the works is being pursued and marked progress in this direction can be foreseen.

From the economic aspect the gas industry has a promising future, for even in the light of present knowledge it is able to convert thermal energy for cooking purposes at an overall capital cost of considerably less than half that required by any other system of distributed energy, and this advantage is likely to be maintained for a long time to come.

COAL ASSAY ON A SMALL SCALE TEST PLANT

By B. H. CUNNINGWORTH,
Midland Junior Gas Association.

A Paper submitted by the British Junior Gas Associations' Joint Council to the Institution of Gas Engineers.

PRIOR to 1905, the former City of Birmingham Gas Department tested its coals by carbonising 50 lb. charges in small cast iron or fireclay retorts. This method simulated the process taking place in the horizontal and inclined retorts that constituted the large manufacturing plant. The results obtained, however, were never very reliable, maybe due to the then existing difficulty of obtaining representative samples and, also, to the poor control of temperature.

In 1905, test results were felt to be so unsatisfactory as to justify the designing and installing of a 20 ton per day horizontal test plant complete with ancillary plant, and this gave results that were much more satisfactory. Later on, intermittent vertical and continuous vertical retorts were added to the manufacturing plant, and corresponding test units were installed at the Gas Department's coal test works. The latest addition has been a lambently, upwardly heated setting of continuous vertical retorts.

In 1936, however, an expensive rebuild of the horizontal test unit (it had grown into two units, each of 18 tons per day) became necessary, and before sanctioning this expense attention was given to the possibilities of the modern versions of the smaller scale test units. It was felt that, with the development of reliable mechanical sampling equipment the advances in heat resisting metals, and the improved methods of heat control, a small scale test unit would give speedier and more easily reproducible results than the large-scale test plant.

A careful survey was made of existing methods, and as a result the experimental plant developed by Dr. Parker for the former Joint Research Committee of the Institution of Gas Engineers and the University of Leeds, with certain modifications, was adopted; the argument leading to this decision will be given later. The plant has come up to expectations and, as was anticipated, can readily be maintained at full efficiency over a long period. It is reliable and quick in action and very useful in obtaining the 'straight' gas thermal yield of coals. It is a very useful control tool for the maintenance of coal quality.

The accumulated knowledge of large-scale horizontal carbonisation makes it quite easy to set the unit to give a similar gaseous thermal yield as would be obtained from the average high temperature horizontal retort system.

Work is also in hand to try to correlate these 'straight' gas results with the thermal yields on continuous vertical retorts. It is not anticipated, however, that even with a correlation factor this small scale static carbonisation method will displace the large continuous vertical retort test unit.

Choice of Small Scale Unit

Having decided that a small scale unit should be installed, the survey of existing units included

(i) apparatus using a few grams of coal, such as
  (*a*) the Fuel Research Board apparatus,*
  (*b*) the Lessing apparatus,
  (*c*) the Geipert apparatus and others;
(ii) the 1/1,000 ton-scale plant†‡;
(iii) the 30 lb. coal charge plant developed by Dr. A. Parker for the Institution of Gas Engineers, at Leeds University§;
(iv) the 85 to 200 lb. coal charge plant of the U.S. National Bureau of Mines and the American Gas Association‖.

The main considerations in the ultimate choice of a unit were that

(i) yields of gas, tar and coke be substantially the same as from the Birmingham horizontal test plant¶;
(ii) such yields should be determinable within the limits stated later in this paper;
(iii) sufficient gas should be made from one 30 lb. charge to determine its calorific value by the Boys calorimeter; and that
(iv) it should be possible to carbonise duplicate charges in a working day of 8 hr.

It was considered that the 30 lb. charge small-scale plant referred to above was the only one that satisfied all these conditions. A possible objection was the low tar yield obtained in the Leeds unit, but it was expected that by suitable modification of retort offtake and condensing arrangements this could be rectified. This expectation was realised.

Description of Test Plant

This plant, which was installed in 1937, comprises a horizontal cylindrical metal retort mounted in a natural-draught gas furnace specially designed and built by the industrial research laboratory of the former Birmingham Gas Department. Special attention was paid to temperature control, the results being dependent upon this factor. The gas passes from the retort through condensers, tar fog extractors, scrubbers, and meters, a proportional part being continuously drawn off through a small meter working in parallel with and geared to the large meter, and finally collected in a sample holder. Suitable safety seals are provided.

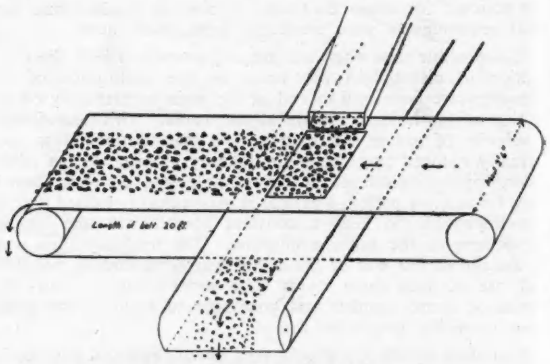


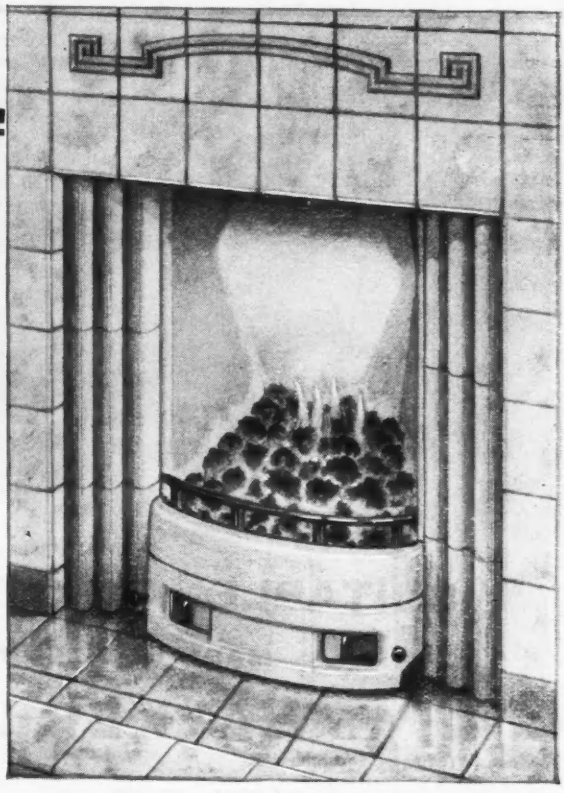
FIG. 1.—*Arrangement of Delivery Chute and Conveyor Belts for Obtaining Test Samples of Coal.*

For tests to be reliable, it is necessary that the 30 lb. charges used should be truly representative of bulk deliveries. This question of sampling has received very detailed attention.

Both hand and mechanical sampling methods are used, complying with British Standard specifications.

The mechanical method used on the coaling plant (Fig. 1) comprises a slot in a traversing conveyor belt, which as it passes

* *Fuel Res. Tech. Paper No.* 24; Sept., 1929. (D.S.I.R.)
† *Gas J.*, 1926, 173, 601 to 603, 677 to 679, 746 and 747.
‡ Sixteenth Report of the Research Sub-Committee of the Gas Investigation Committee of the Institution of Gas Engineers. *Trans. Inst. Gas Eng.*, 1925-26, 162 to 229.
§ *Trans. Inst. Gas Eng.*, 1925-26, 174.
‖ U.S. Nat. Bur. Mines Monograph No. 5, 1934, 124.
¶ *Inst. Gas Eng. Comm. No.* 343, Table 1.



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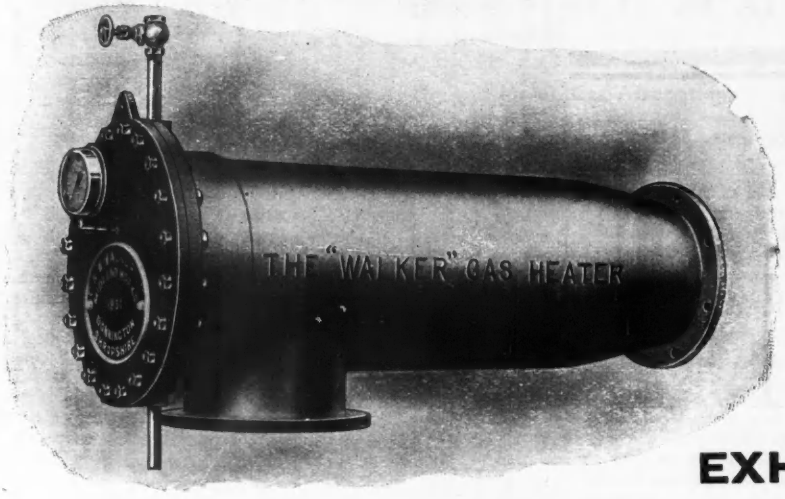

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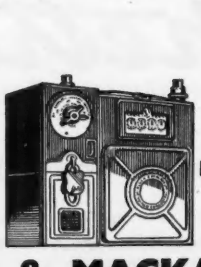

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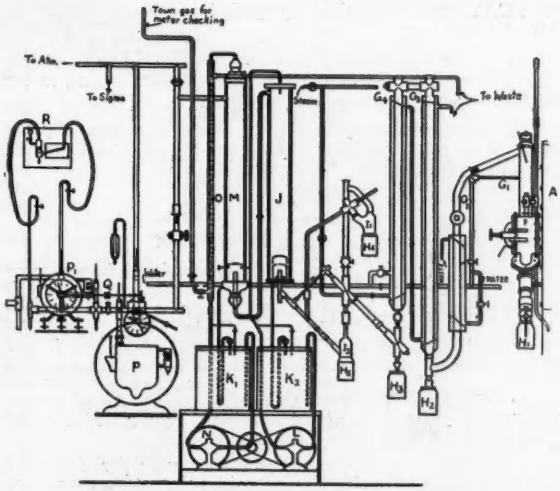
under the stream of coal allows a full cross sectional increment to fall on to a wide slow moving belt travelling at right-angles. The coal sample then passes down a chute into a suitable receiver. The number of increments taken of a bulk delivery of normally 10 to 30 tons totals about 2%.

The small scale test plant in use at the present time differs from the original plant of 1937 in improvements to the purification train and more accurate control of the retort furnace temperature. In a short paper, it is only possible to give a brief description of the plant, the method of carrying out a test, and the information obtained from the test.

Carbonising Plant

Furnace.—The furnace is of the natural-draught recuperative type, designed to allow of its use with a through retort should it be required at any time. It measures 5 ft. 9 in. long × 3 ft. 7 in. high × 3 ft. 9 in. wide, and it is raised 2 ft. off the ground on a channel-iron framework that allows of a limited amount of movement.



A	Natural-draught Furnace.	K1/2	Reagent Vessels (Glazed Earthenware).
D	Retort Mouthpiece (Cast Iron).	L	Acid Pump (Tantiron).
G1/2/3/4	Water-cooled Condensers.	M	Sulphuretted Hydrogen Washer.
H1/2/3/4/5	Tar Receivers ("Kilner" Jars with Monel Metal Tops).	N	Soda Pump.
		O	Water-jacketed Soda Supply Pipe.
I1/2	Tar Extractors.	P	30-light Wet Meter.
J	Barronia Metal Ammonia Washer.	P1	2-light Wet Meter.
		Q	Meter Gearing.
		R	Differential Gauge.

FIG. 2.—*Diagram showing the Purification Train of the Birmingham Small-scale Test Plant for Coal.*

The steelwork on the front of the furnace is divided horizontally to allow of easy replacement of the retort, which presents no difficulty and does not interfere with the brickwork of the furnace arch.

There are four burners each side of the furnace, each fitted with an 'Amal' industrial gas injector having a calibrated gas jet and adjustable primary air control. An adjustable secondary air port is situated below each burner. The products of combustion pass the length of the furnace three times before escaping to the waste gas ducting, and there are balancing dampers each side of the furnace, as well as a main damper for adjusting the pull. The temperature of the furnace is closely maintained by a Kent temperature controller-recorder unit working a Satchwell motorised valve on the gas supply to the burners. There are six chrome-alumel thermo-couples in silica sheaths in direct contact with the retort body, three each side of the furnace. One in a central position in the furnace is usually chosen to work the controller unit, and the others are read in turn on a six-way plug and jack board, as required.

Retort.—The cylindrical retort of Cronite metal (a nickel-chromium alloy is mounted horizontally in the furnace and measures 4 ft. 9 in. long × 9 in. dia. (8 in. dia. internally). It weighs approximately 260 lb., and can safely be used up to 1,150°C. The cast iron mouthpiece and door are bolted to the retort, and the securing catch is of mild steel. The life of the retort is between two and three years.

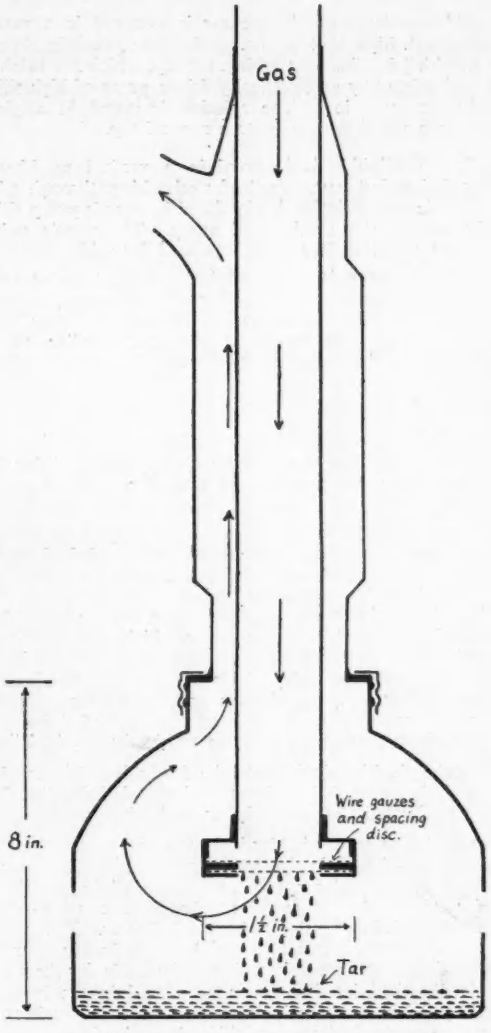


FIG. 3.—*Diagram of Tar Fog Extractor.*

The water-cooled offtake is of 2 in. dia. and is inclined upwards from the retort, at an angle of 45°, to act as a reflux condenser, whereby the ammoniacal liquor falling back to the receiver helps to keep cooler conditions around the mouthpiece.

Purification Train

Condensers.—In addition to the water-cooled offtake, which removes the bulk of the ammoniacal liquor and about half of the total yield of tar, there are three water-cooled condensers of 1½ in. internal dia., the first two of which discharge their condensate into a common receiver.

Tar Fog Extractors (Fig. 3).—Tar fog is removed by passing the gas at high velocity through two wire gauze discs (100

mesh per in.) separated by a thin spacing washer having a ½ in. dia. hole in its centre. In case of blockage there is a standby tar extractor of similar design having wire gauzes of 50 mesh per in.

The tar and ammoniacal liquor recovered are collected in five glass Kilner jars attached to the apparatus by means of specially made caps of corrosion-resistant Monel metal.

With the exception of one short length, there are no horizontal pipes in the condensing and tar extracting plant.

Scrubbers.—Ammonia in the gas is removed in a vertical scrubber 4 ft. high × 4 in. dia. made of acid-resisting bronze, packed with ⅛ in. dia. glass tubing, through which 5% sulphuric acid is circulated by an electrically driven pump of high silicon cast iron construction. The solution is stored in a glazed earthenware vessel with a bottom run off tap.

Hydrogen sulphide is removed in a vertical scrubber of similar design, but constructed of steel tubing, through which 15% caustic soda solution is circulated by a suds pump driven by the same motor as the acid pump. The caustic soda is stored in a vessel similar to the one used for acid storage.

Meters.—The gas is measured by a 30-light meter and a 5 cu.ft. per hr. meter geared together so that 1/15th part of the gas produced is collected in the 12 cu.ft. sample holder, which is counterbalanced to act as an exhauster, similar to the arrangement at the University of Leeds.

Method of Testing

The two 30 lb. charges of coal, crushed to below ½ in. grade, are weighed into metal containers having tightly fitting lids, and at the same time samples are taken for moisture content, proximate analysis, and size analysis using B.S.S. sieves.

The coal is charged into the retort by a specially designed D-section scoop, the operation being completed in less than 5 sec. to avoid loss of gas. The retort, maintained at a temperature of 880°C. overnight, is brought up to 980°C. in 1½ hr. and is maintained at that temperature for a further ¾ hr., giving a carbonising period of 2¼ hr., after which the coke is discharged and the retort temperature reduced to 880°C. for the second test on the same day. This schedule of operations was decided on after many experiments, and meets the requirements before mentioned. It has to be carefully followed if the results from duplicate charges are to agree within the required limits.

The coke yield is calculated on the dry basis and is tested for size analysis, using B.S.S. sieves, and sampled for the determination of volatile matter, sulphur, and ash content.

The gas in the sample holder is decanted into a second holder to avoid risk of stratification. It is sampled over mercury for the Bone and Wheeler apparatus analysis of its constituents and for calculated calorific value. Duplicate tests for calorific value are carried out, using a Boys calorimeter. The metered volumes of gas are corrected to 60°F. and 30 in. Hg. saturated. A correction to the gas volume has to be made for the carbon dioxide absorbed by the caustic soda used in the hydrogen sulphide washer, and this is calculated from tests made at the same time as the hydrogen sulphide determination.

The thermal yield is calculated on an oxygen-free basis, as the plant contains air at the start of the test and a mixture of hydrogen and carbon monoxide at the finish. This correction to the thermal yield amounts to about 1.2 therms per ton.

The hydrocarbon enrichment value (H.E.V.) is calculated from the gas analysis.

Ammonia in gas is calculated from a test of the washer liquor.

The gain in weight of the five Kilner glass jars gives the total weight of tar and liquor recovered. An allowance is made for the tar recovered, on weighed cleaning rags, from the pipes and extractor gauzes, and pitch on the retort door and mouthpiece is removed and weighed. The ammoniacal liquor yield is measured by decanting it off the tar, and it is tested for ammonia content.

The tar is tested for specific gravity, moisture content, and free carbon. The tar yield per ton and specific gravity are calculated on the dry basis.

Taking into account the errors likely to be encountered in the sampling of the coal and in subsequent measurements connected with the carbonising test, it is considered that the yields reported are accurate within the following limits:—

Gas yield	...	±0.5 therm per ton.
Coke yield	...	±0.5% by weight.
Tar yield	...	±0.5 gall. per ton.

Maintenance of the Plant

The plant is cleaned and maintained by a workman who assists the chemist in the charging of the retort. The services of a second workman are needed for a short time at the start and finish of each test.

Furnace temperature control is of the utmost importance, as a divergence of 20°C. from the 880° to 980°C. range represents an error of one therm in the final results.

The temperature measurement and control units, and the Boys C.V. set are maintained by specialised staffs of the Central Laboratories.

The meters are regularly checked with the aid of a 20-light test quality meter and a 20 cu.ft. test holder calibrated to the National Physical Laboratory standards.

The small-scale test plant in use today is substantially the same as in 1937, and it has proved a valuable asset to the central test works.

SOLID FUEL DATA

Representatives of the principal professional bodies connected with engineering and building attended a reception at the Building Centre in London last month to mark the publication of a book, *Architectural Design Data for Solid Fuel.* Published by the Coal Utilisation Joint Council and written by Mr. John Pinckheard, the book is intended to furnish architects with information on the storage of solid fuel in the larger buildings and to encourage the incorporation, when new buildings are designed, of suitable facilities for delivery and handling.

By reason of the reliance upon manpower for delivering and handling and the lack of facilities for storage and ash removal, the author states, the unfortunate and incorrect impression was created that solid fuel was inconvenient to use. It is the author's conviction that solid fuel may be cleanly and unobtrusively handled and stored, if the fuel, building and engineering experts co-operate early in any project, but it is emphasised that it is not intended that the architect should in any way replace the consultant heating engineer.

IRON AND STEEL ALLOCATION

An Order calling for returns of iron and steel consumed during the first half of 1951, corresponding stocks, and estimated requirements for the following nine months, has been made by the Minister of Supply. The object is to collect information on which the allocation of steel can be based. Allocation schemes will be introduced as soon as possible for alloy steel and for all other steel—including sheet steel and tinplate, which are already allocated. The Order—the Iron and Steel Utilisation (Information) Order, 1951—calls for two returns. Return 'A' is required if an undertaking consumed 25 tons or more of non-alloy iron and steel in the course of the half-year.

A separate return is needed of all the iron and steel, including alloy iron and steel, consumed and held in stock in each of the undertaking's works and stockyards. Return 'B' is required if an undertaking consumed either five tons of alloy iron and steel or 1,000 lb. of high-speed steel in the half-year. A separate return is needed of all the alloy iron and steel, including high-speed steel, consumed and held in stock at each of the undertaking's works and stockyards. Returns are not required from works using iron and steel only for the main processes of iron and steel manufacture; for iron castings other than alloy iron castings; or from scrap merchants, stockholding or distributing merchants; or from warehousemen.

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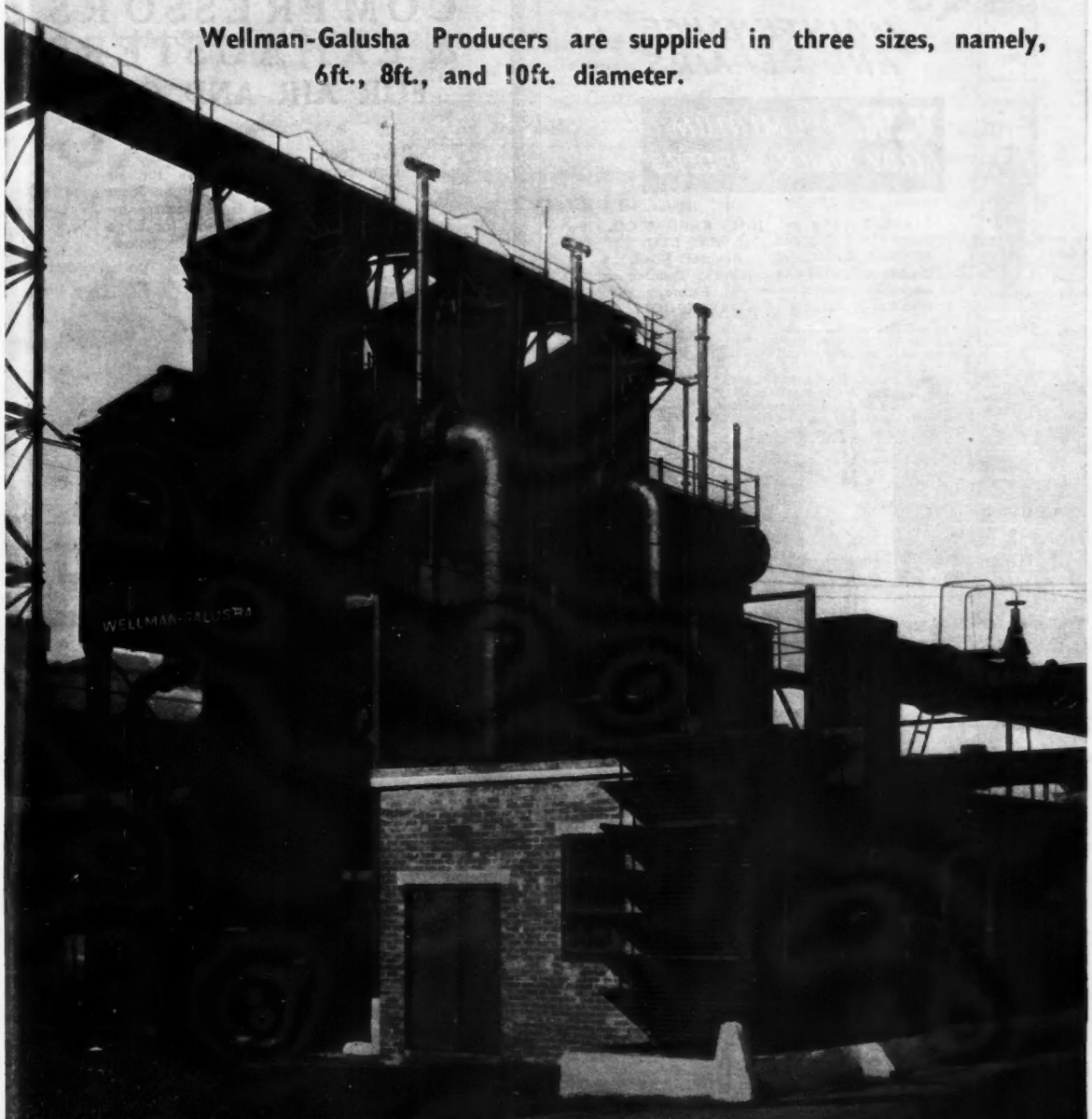

THE WELLMAN SMITH OWEN ENGINEERING CORPN. LTD.
PARNELL HOUSE, WILTON ROAD, LONDON, S.W.1 WORKS: DARLASTON, SOUTH STAFFS.

INDUSTRIAL RUBBER HOSE

CENTRAL MANFG., & TRADING CO. (DUDLEY) LTD.
OLD HILL STAFFS.
PHONE: CRADLEY HEATH 69181 (5 LINES).
"EVERYTHING IN ASBESTOS."

CASES FOR BINDING

Quarterly Volumes of the "Gas Journal."

5/- each, post free

Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

FOR OVERHEAD MAINTENANCE AND REPAIRS

K.W. ALUMINIUM ALLOY TOWER LADDERS

Light, Strong and Durable. Supplied on trailer chassis that can be manhandled with ease. Full particulars from sole manufacturers

JOHN KERR & CO. (M/C) LTD.
Ashcroft Road,
Kirkby Trading Estate,
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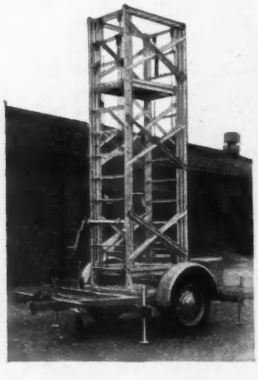
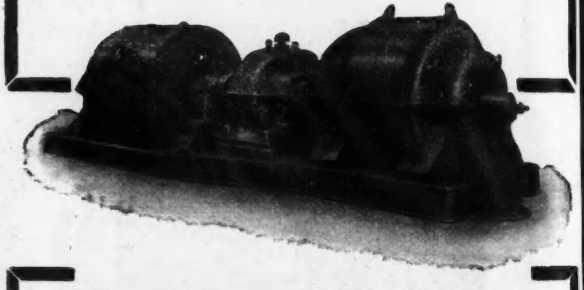


TURBO-COMPRESSORS & EXHAUSTERS FOR AIR AND GAS.

* * *

We build a complete range of Compressors & Exhausters for air and GAS, suitable for all purposes connected with the GAS industry, including Turbo-Compressors for large capacities, as illustrated below.



WRITE FOR PAMPHLET No. 1018 GIVING PARTICULARS—

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Telegrams: REAVELL, IPSWICH Telephone: 2124 & 5.

CONVEYORS,
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LEEDS.

COAL AND COKE SCREENING & SIZING PLANTS

RETORT SETTINGS
PRODUCERS. FURNACES
REPAIRS

PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/-; by post 1/2d.

Subscription Rates: Home and Empire :- 52/- per annum; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calender & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: CENtral 2236-7. Telegrams: Gasking, Fleet, London.

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SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.
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GAS PURIFICATION & CHEMICAL COMPANY LIMITED

ESTABLISHED 1873

PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

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THE COOKER CLEANER

Tins for Sale to Consumers. In Bulk for Works Use

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WHERE'S YOUR
NU-SWIFT?

The World's Fastest Fire Extinguishers — for every Fire Risk

Pressure-operated by sealed CO_2 Charges

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KINGS PATENT AGENCY, LTD.

(Director, B. T. King, A.I.M.E., Patent Agent) Advice. Handbook, and Consultations free. 146a, Queen Victoria Street, London, E.C.4. Phone: City 6161.

APPOINTMENTS VACANT

APPLICATIONS are invited for a position with a leading Scottish firm of manufacturers of Domestic and Heavy Duty Cooking Equipment. The position is for a CHEMIST to take charge of development and testing of equipment on the laboratory side, with particular reference to appliances using Town's Gas. Applicants should have qualifications in chemistry, preferably physical chemistry. Experience of this type of work would be an advantage. Address: 1686, Wm. Porteous & Co., Glasgow.

ASSISTANT INSPECTOR 30/40 years of age with draughting experience required by an old established Engineering firm in the West Riding of Yorkshire. Inspection chiefly of cast iron and fabricated vessels. Applicants must have served an apprenticeship and have had many years of practical floor experience, preferably with a firm manufacturing gas and chemical plant or with a Gas Undertaking. Superannuation scheme. State age, experience and salary required, to No. 9971, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

EAST MIDLANDS GAS BOARD

LOUTH UNDERTAKING.

EXPERIENCED MAIN AND SERVICE LAYER required. Rate 2s. 9½d. per hour—union conditions, etc. Applications giving full details of training and experience to :—

D. L. BIRCHMORE,
Local Manager.

East Midlands Gas Board,
Louth Undertaking,
Louth, Lincs.

SCOTTISH GAS BOARD

PERTH GROUP.

PERTH DISTRICT.

WORKS TECHNICAL ASSISTANT.

APPLICATIONS are invited for the post of WORKS TECHNICAL ASSISTANT at Friarton Gas Works, Perth. Candidates should possess the Institution of Gas Engineers Higher Grade Certificate (Manufacture) and preference will be given to those having experience of Continuous Vertical Retorts and C.W.G. Plants.

The salary will be according to experience and qualifications, the maximum being Grade VI of the National Salary Scales (£455 to £535 per annum).

The terms and conditions will be those agreed by the National Joint Council for Gas Staffs. The successful applicant will be required to pass a medical examination and to subscribe to any superannuation scheme that the Board may subsequently adopt.

Applications stating age, personal details, particulars of education, training, qualifications and experience should be submitted to the undersigned not later than September 12, 1951.

W. NICOL BAIRD,
Group Manager.

Gas Works,
Friarton,
Perth.

SCOTTISH GAS BOARD

NORTHERN DIVISION.

APPLICATIONS are invited from suitably qualified persons for the following posts :—

ABERDEEN DISTRICT.

(*a*) MECHANICAL ENGINEERING ASSISTANT fully qualified and experienced in the design, erection, operation and maintenance of Mechanical plant, including steam boilers, prime movers, conveyors, etc.

Applicants, who should be Corporate Members of the Institution of Mechanical Engineers or of equivalent status, must be accustomed to the preparation of plans and specifications and to the control of staff and workmen.

The candidate selected will be required, under the District Manager, to assume responsibility for the control and maintenance of the mechanical plant of the Undertaking.

(*b*) JUNIOR TECHNICAL ASSISTANT with engineering and drawing office experience and a knowledge of Chemistry. Previous Gas Works experience will be an advantage.

The salary scales for the above posts are in accordance with the Board's Scale of Salaries for adult Administrative, Professional and Technical Staffs, viz:—

(*a*) Provincial 'A' Grade X—£620-£720.
(*b*) Provincial 'A' Grades II-VI—£275-£535.

Placing in the scale will in each case be in accordance with qualifications and experience.

Candidates, who may be required to undergo a medical examination, should state whether they meantime hold a superannuated position.

Applications giving full particulars of age, qualifications and experience, together with *copies* of three recent Testimonials, should be lodged with the undersigned not later than Saturday, September 15, 1951.

H. S. MILNE,
Divisional Controller.

50, Cotton Street,
Aberdeen.
August 20, 1951.

(*Classified advertisements continued on Supplement* 4)

APPOINTMENTS VACANT (ctd.)

DRAUGHTSMEN required experienced in Gas-works and By-Products Plants. Good pay for experienced men, capable of Design and Development work. Pension Scheme and Canteen facilities.

Apply, stating experience and qualifications to W. C. Holmes & Co. Ltd., Whitestone Ironworks, Huddersfield.

THE Chemical Engineering & Wilton's Patent Furnace Co. Ltd., require an ASSISTANT ENGINEER with Technical Design and Practical Experience of Gas Works By Product Plant, able to supervise installation of complete plant. Permanent position, Pension Scheme, Canteen, etc. Write, stating age, experience, salary required, etc., to Holbrook Park, Horsham, Sussex.

SOUTHERN GAS BOARD

NORTHERN DIVISION.

ACCOUNTANCY ASSISTANT.

APPLICATIONS are invited for the above position from Accountants, preferably with experience of reorganisation, who have either passed, or will shortly be taking, the Final Examination of a recognised accountancy body.

The duties will include work on specific tasks of reorganisation of stores and office systems within the Division, and the successful applicant will be able to return to Oxford daily when working elsewhere.

The salary will be in accordance with Grade IX (£570/£670) of the National Joint Council for Gas Staffs Scales.

Applications in writing should reach the undersigned within fourteen days of the appearance of this notice, stating age and full details of education, experience and qualifications.

ALEXANDER TRAN,
Divisional General Manager.

Southern Gas Board,
(Northern Division.)
Therm House,
St. Aldate's,
Oxford.
August 23, 1951.

WALES GAS BOARD

LLANDUDNO UNDERTAKING.

WORKS SUPERINTENDENT.

APPLICATIONS are invited from suitably qualified personnel for the above mentioned position, the salary for which will be within the range of Grade A.P.T. VI of the National Scale for Gas Staffs, (£455-£535) 'A' Undertakings. Accommodation is available at £52 per annum inclusive of Rent, Rates, and gas up to 40,000 cu. ft. per annum.

Applicants should have good all-round Gas Works experience, especially with regard to Horizontal Retorts, Electrical Machinery, Blue Water Gas manufacture and Crude Benzole Recovery.

Ability to control labour and to organise, are essential qualifications. Extensions to existing plant are in hand, and present production is of the order of 300 million cu. ft. per annum.

Applications stating age and experience, accompanied by the names of two referees, should be addressed to the undersigned, in a plain envelope endorsed "Works Superintendent," to be received not later than September 13, 1951.

H. ALLERTON,
Engineer and Manager.

Showrooms & Offices,
Market Street,
Llandudno.

NORTHERN GAS BOARD

STOCKTON DIVISION.

TECHNICAL ASSISTANT (MANUFACTURE).

APPLICATIONS are invited for the above appointment at the Stockton Unit.

The salary attached to the post will be related to the qualifications and experience of applicants.

Applications, giving details as to salary required, age, training, qualifications and experience, together with the names of two referees, should be forwarded not later than September 20, to Mr. G. W. Perks, Engineer and Manager, Gas Works, Thompson Street, Stockton-on-Tees.

F. L. SCAIFE.
Divisional General Manager.

Gas Works,
Thompson Street,
Stockton-on-Tees.

NORTHERN GAS BOARD

DARLINGTON DIVISION.
CENTRAL SUB-DIVISION.
SHIFT ENGINEER.

APPLICATIONS are invited for the position of SHIFT ENGINEER at the Darlington Unit of the Northern Gas Board.

Salary in accordance with the National Joint Council for Gas Staffs Agreement, Grade A.P.T. V, Provincial 'A' Scale—£425 to £505 per annum. Initial placing in accordance with experience.

Applicants must have a sound practical experience in the control and operation of Vertical Retorts, Carburetted Water Gas Plant and Ancillary Gasworks Plant.

Applications, stating age, particulars of training, experience and qualifications, should be submitted to Charles Hindle, Esq., Engineer & Manager, Darlington Unit, Gas Offices, John Street, Darlington, not later than September 3, 1951.

F. WILSON,
Divisional General Manager.

August 13, 1951.

NORTHERN GAS BOARD

INTERNAL AUDIT ASSISTANT.

APPLICATIONS are invited for the appointment of INTERNAL AUDIT ASSISTANT for the Middlesbrough area, on the staff of the Chief Accountant.

Applicants must have passed the Intermediate examination of a recognised Accountancy body.

Commencing Salary within the range £500-£580 per annum.

The successful candidate will be required to pass a medical examination, and the appointment will be subject to the provisions of such Superannuation Scheme as may be made for the Gas Industry.

Applications, stating age, experience and qualifications, giving the names and addresses of two persons to whom reference may be made, should be addressed to the Chief Accountant, Northern Gas Board, 30, Grainger Street, Newcastle-upon-Tyne, 1, to arrive not later than Saturday, September 15, 1951.

JOHN F. JACKSON,
Secretary.

August 22, 1951.

NORTHERN GAS BOARD

SUNDERLAND DIVISION.

APPLICATIONS are invited for the following positions :—

SENIOR CHEMIST :

Applicants for this appointment, which carries Divisional Status must be suitably qualified and be capable of taking over the supervision of Chemical Testing throughout the Division.

Practical experience of Gas Works or Coke Oven Plant operation, is essential.

The salary to be subject to negotiation and will be commensurate with responsibilities of the position and the qualifications of the candidate.

WORKS CHEMIST—SUNDERLAND UNIT :

Applicants for this appointment should be conversant with routine chemical testing and with experience of Gas Works or Coke Oven Plant operation.

Salary—A.P.T. Grade IV, minimum £380 per annum, commencing at a figure commensurate with qualifications and experience.

The successful candidates will be required to pass a medical examination and the appointments will be subject to the provisions of such Superannuation Scheme as may be adopted by the Board.

Applications stating age, experience and qualifications giving names of two referees, should be addressed to the undersigned within fourteen days of the issue of this advertisement.

W. O. KIRKWOOD,
Divisional General Manager.

Fawcett Street,
Sunderland.
August 27, 1951.

PLANT FOR SALE

CONNELL OF COATBRIDGE

OFFER THE FOLLOWING BOILERS FOR IMMEDIATE DISPOSAL.

ECONOMIC

Babcock & Wilcox Marine type, water tube Boiler, 22,000 lb., evaporation. 250 lb., working pressure. Oil fired and complete with burner equipment, oil and water pump, fuel storage tanks, etc. The boiler is self contained requires no building in and can be moved or shipped in one piece. Very suitable for land installation. Practically new.

One—Wet back Economic type Boiler, 13ft. 6in. dia., × 10ft. 6in. long × 180 lb., working pressure. Three furnace.

One—Paxman, twin flue economic type Boiler, 12ft. 6in. × 7ft. 0in. × 100 lb., working pressure with Meldrum patent firegrate.

VERTICAL

One—Blake, multitubular—17ft. 9in. × 7ft. 6in. x 160 lb., working pressure.

One—Nelvin oil fired thimble tube—12ft. 4in. x 5ft. 3in. × 100 lbs., working pressure.

One—Blake, multitubular—10ft. 9in. × 4ft. 6in. x 90 lb., working pressure.

One—Cochran, multitubular—10ft. 0in. × 4ft. 6in. x 100 lb., working pressure.

One—Ruston Thermax, No. 12 oil fired—9ft. 3in. x 4ft. 1in. × 120 lb., working pressure.

Four—Clarkson Thimble Tube oil fired, type BAT0 35, 120 lb., working pressure 300 lb., evaporation.

LOCO TYPE

One—Wilson semi loco type economic boiler, 3,000 lb., evaporation, 100 lb., working pressure. Year 1937. Complete with Riley Automatic Stoker.

One—12 N.H.P. 100 lb., working pressure by Robey.

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LUX
GAS PURIFYING MATERIAL

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FOR
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UNION FOUNDRY, MANSFIELD, NOTTS.
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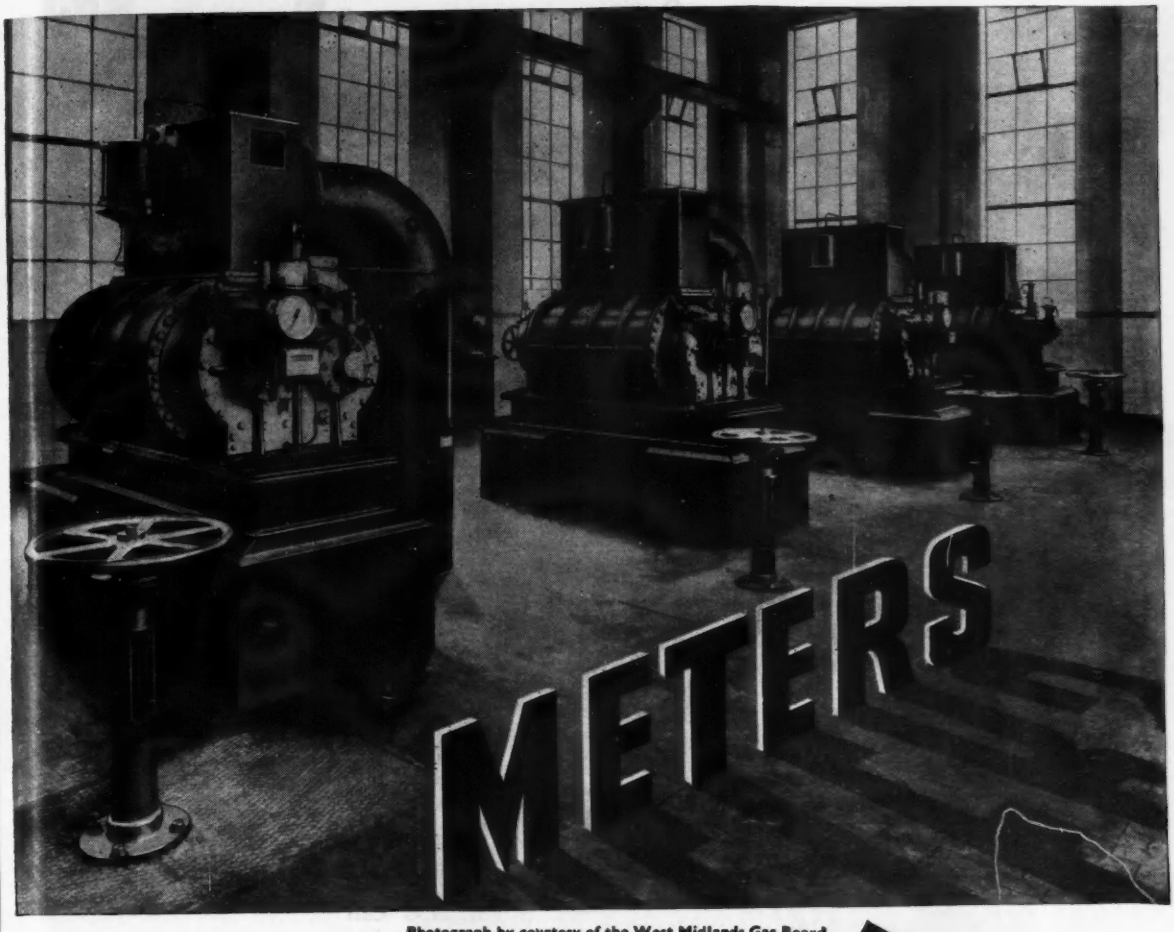
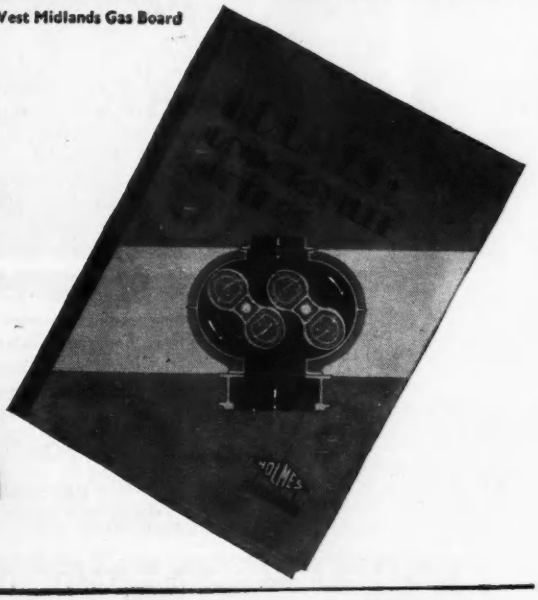


Photograph by courtesy of the West Midlands Gas Board

DAY and NIGHT these Holmes-Connersville Meters are on duty metering gas made at the Saltley Works, Birmingham, of the West Midlands Gas Board. Total capacity 24,000,000 cu. ft. per day. Accuracy, reliability, long service and space economy are some of the features of their design which is fully described in brochure No. 26 published by the manufacturers. This brochure is available to Gas Authorities on request.

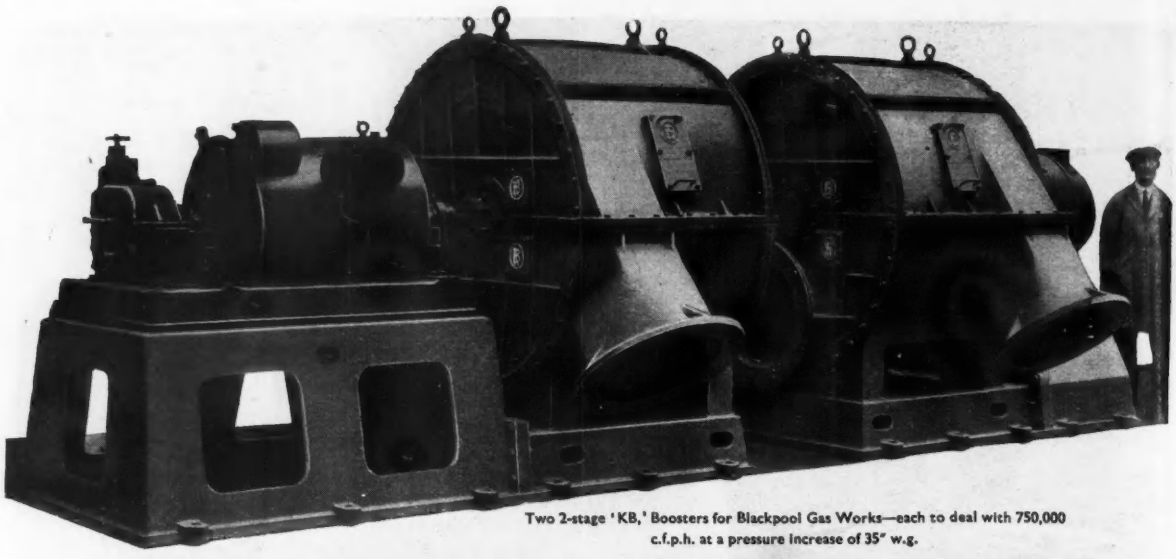


HOLMES-CONNERSVILLE METERS

W. C. HOLMES & CO. LTD. HUDDERSFIELD, LONDON, BIRMINGHAM

Telephone: Huddersfield 5280 London: Victoria 9971 Birmingham: Midland 6830

FOUNDED 1850 HOLMES HUDDERSFIELD



Two 2-stage 'KB,' Boosters for Blackpool Gas Works—each to deal with 750,000 c.f.p.h. at a pressure increase of 35" w.g.

"KEITH-BLACKMAN"

FANS *for every purpose*

for which fans can be employed profitably in or by the Gas Industry

VENTILATION

GAS BOOSTING and EXHAUSTING

FORGE and FURNACE BLAST

MAN-COOLING

WE make all types of Fans—"High Efficiency" for boosting or exhausting gas up to 3 lbs. p.s.i. and for volumes from 5,000 to 1,500,000 cfph; Cast Iron and Steel-plate "Pressure" fans for up to 2 lbs. p.s.i. air blast to furnaces, forges, water gas plants, burner equipment, etc; "Turbo" fans for applications requiring up to 6 lbs. p.s.i.; "Centrifugal" fans for draught on boiler fires to ensure economical steam production, or for cold air douche to workers in retort houses, etc.; "Centrifugal" or "Axial" fans for supplying ventilating air through ductwork; "Propeller" fans for moving air in volume for ventilating; "Propeller" fans on portable structures for cooling workers at furnace fronts; and "Tenaxe" fans for re-circulating high temperature gases and air in various types of heat treatment furnaces.

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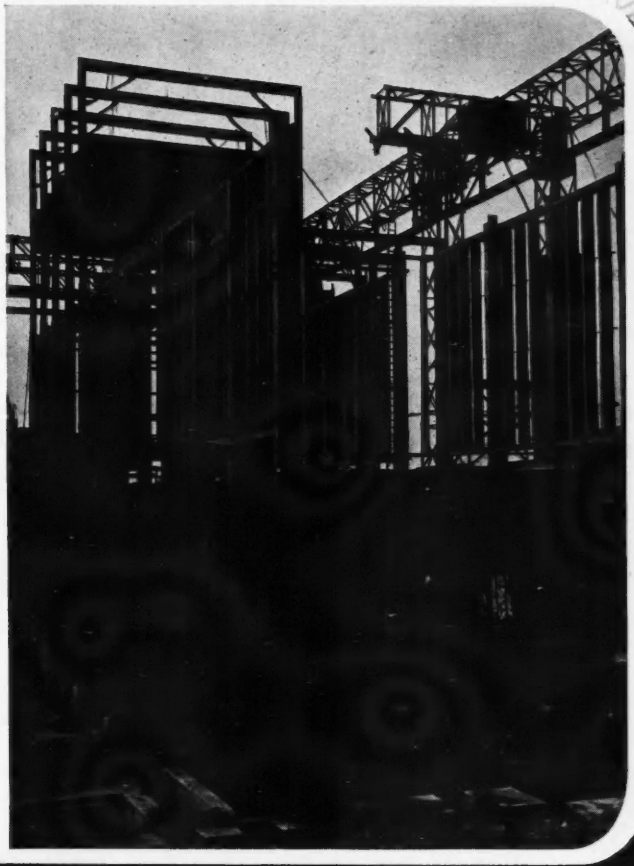
MANCHESTER, 4: 26 Corporation Street. Tel. No.: Blackfriars 4228. BIRMINGHAM, 2: 75 New Street. Tel. No.: Midland 0317-8.
LEEDS, 1: 40/41 Royal Exchange Chambers. TN. Leeds 27286. NEWCASTLE-ON-TYNE 1: 21 Mosley St. TN: Newcastle 22284.
SCOTLAND: 90 Mitchell Street, Glasgow, C1. TN: Central 7973. IRELAND: 7 Brunswick St. Belfast. TN: Belfast 21114.
SOUTH WALES: 127 Stanwell Road, Penarth, nr. Cardiff. TN: Penarth 249.

Printed by STRAKER BROTHERS LTD., E.C.2, for WALTER KING, LIMITED, 11, BOLT COURT, FLEET STREET, LONDON, E.C.4. Wednesday, August 29, 1951

Work in progress



COVENTRY,

Foleshill Works

Benches G.H. & J. under construction, each comprising 24, 50 inch Glover-West Vertical Retorts.

West's Gas IMPROVEMENT CO., LTD.

MILES PLATTING, MANCHESTER, 10

Telephone: COLlyhurst 2961-5. Telegrams: Stoker, Manchester.

London Office: COLUMBIA HOUSE, ALDWYCH, W.C.2. Telephone: HOLborn 4108-9. Telegrams: Wesgasco, Estrand.

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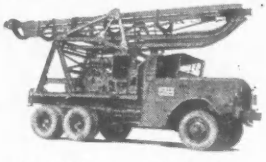
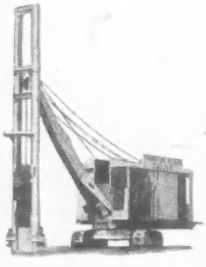
PROVIDES SECURE FOUNDATIONS FOR ANY STRUCTURE

PLANT FOR DRIVING OUR SPECIALISED SYSTEM OF PILING

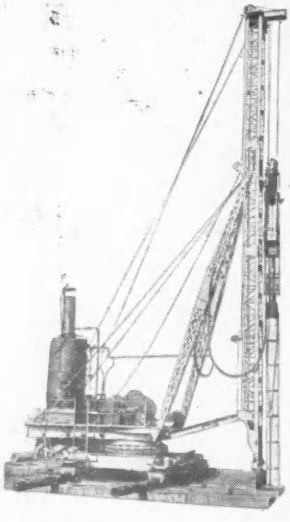


(A) Mobile petrol-diesel outfit for small contracts.
2-ton Drop Hammer.



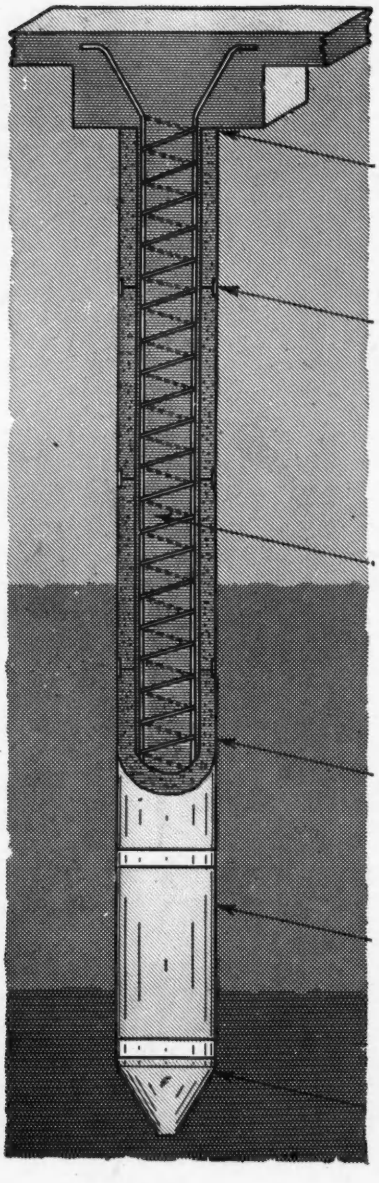
(B) Small mobile diesel outfit for undulating sites.
3-ton Drop Hammer.

(C) Medium mobile diesel outfit for undulating sites.
3-ton Drop Hammer.



(D) Typical steam frame for extensive sites.
4-ton Steam Hammer.

(E) Large mobile diesel outfit for undulating sites.
3-5 ton Drop Hammer.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WATERTIGHT STEEL BAND AT JOINTS BETWEEN STANDARD LENGTH PILE SHELLS
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SKIN FRICTION RETAINED AS INITIAL SET IS NOT DISTURBED
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NO WASTAGE — PILE SHELL DRIVEN IN DESIRED

NO COSTLY EXTENSIONS STANDARD SECTIONS TO RESISTANCE

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Northern Office: Albion Ironworks, Manchester 10. Telephone: Collyhurst 3049. *Scottish Office:* 169 Hamilton Road, Glasgow, E.2. Telephone: Shettleston 2927